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MEDICAL ANNALS
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SERUM, ANTITOXIN, AND DRUGS IN THE TREATMENT OF MENINGOCOCCUS MENINGITIS*

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HISTORICAL DATA

Serum therapy in meningococcus meningitis had its beginning with Jochmann in 1906.[1] He immunized horses and treated 30 human cases of meningitis with their serum. Results were so encouraging that he expressed the belief that serum might prove a useful means of combating the disease.

In 1913, Flexner[2] reported the treatment of 1,300 cases with serum with a mortality less than half as great as that prevalent during that period. The importance of the serum being polyvalent was stressed by Dopter[3] and by Wollstein,[4] who had found that meningococci were not all alike serologically.

The importance of polyvalency was emphasized further by the intensive work done during the World War when meningococcus meningitis was so prevalent in the army camps of France, England, and the United States. Out of this work grew classifications of meningococci into two broad, main groups. The French[5] (Nicolle, Debains and Jouan) referred to these as A and B; the British as I and II[6] (Griffith; Scott). Then Gordon and Murray[7] subdivided these two groups, by absorption of agglutinins, into I, II, III, and IV. The Gordon-Murray classification has come into use in practically all English-speaking countries, while the French A and B classification is more commonly used on the Continent of Europe. No confusion need arise if it be remembered that the French A represents the Gordon-Murray I and III, and that B represents II. Too little is known of IV to be sure of its relationship, although it is apparently quite distinct in this country.

It was during the World War period that the value of antitoxic as well as antibacterial properties in serum was emphasized by Gordon.[8]

From 1918 to 1928 there was relatively little meningitis, and the cases were mostly sporadic. There was a general feeling that serum therapy was on a satisfactory basis.

In 1928, a severe wave of meningococcus meningitis appeared on the West Coast of the United States and moved slowly eastward. Evidence indicated that this wave had its origin in China and that it reached the United States by way of the Philippine Islands. In these outbreaks, serum proved very disappointing. Mortality remained high. Many physicians felt that serum did no good at all.

TESTS OF THE EFFICACY OF SERUMS

To what could this apparent failure of a method of therapy which had once seemed so promising be attributed? In order to find an answer to this question it seemed imperative to find a more satisfactory way of evaluating serum before it was released for distribution. "What constitutes a good serum?" is a question that can be answered only when a good serum can be recognized as such before the therapeutic test is made.

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* Read before the Society, November 10, 1937.

Efforts to determine the value of serum had been made from the very beginning of its use. Jochmann[1] protected small laboratory animals before he gave serum to patients. Flexner and Jobling[9] did likewise. A general impression developed among workers in this field that laboratory animals, other than the monkey, were not susceptible to infection with meningococci, that death among them was due to endotoxins which gave irregular results, and that, in consequence, a protection test for standardizing serum was not feasible. Bacteriological knowledge has developed rapidly within the last few years, and modern aids to technical skill have made many things easy that were formerly difficult. We know now that very virulent meningococci may often lose their virulence within a few days after isolation, and that stock cultures kept in laboratories may lose specificity and antigenicity as well. These factors were all involved in complicating the problem of satisfactory standardization of antimeningococcic serum upon a protection basis. It was largely due to this situation that the mouse-protection test, worked out by Hitchens and Robinson[10] in 1916, was not more successful in other hands.

Thus test-tube methods came into use. The agglutination test became generally adopted. Such a standard is arbitrary, but it has served a two-fold purpose: (1) It indicates that the horses responded to injection by producing some kind of antibodies, and (2) it shows polyvalency. Evidently there are other factors involved and such a test does not tell enough.

During the last decade it has been shown[11] (Branham and Lillie; Zdrodowski and Voronine; Zdrodowski and Golinewitch) that meningococcus infection can be produced in several types of small laboratory animals if cultures of sufficient virulence are used. Intracisternal injection of rabbits and guinea-pigs with relatively small doses of very virulent meningococci is followed by a typical acute meningitis. It has been impossible to protect these animals[12] (Branham and Pabst) because horse serum is very toxic for them when it is given by the intracisternal route, and it has thus far proved ineffective by other routes. With mice, however, intraperitoneal injection is followed by a generalized infection[13] (Miller; Branham; Rake; Mishulow and Melman; Cohen) and they can be protected against such infections by immune serum. Different lots of serum vary widely in protective action, although the agglutinin content of all may be high.

Virulence in meningococci is transient, and therefore frequent changes in cultures used in such protection studies have been necessary. Recently, Miller[14] has found that suspending meningococci in a solution of mucin emphasizes any virulence which such a culture may possess, so that with very virulent strains as few as 2 to 10 meningococci may produce a fatal infection. This technic makes it possible to use a given culture over a long period of time and increases the possibility of standardizing such a method sufficiently for its use in evaluating sera. Such a small minimal lethal dose makes a more accurate titration of serum possible. With so many variable factors, i.e., mice, virulence of culture, lot of mucin, and variation in serum, reliable standardization of such a protection test is not easy, but until that is done it is impossible for a comparison of results obtained in different laboratories to be accurate. Nevertheless, the fact that many sera protect mice so well, whereas others do not, may be considered as valuable information, although the relation between mouse protection and human protection is not yet established. Steps toward working out a standardized mouse-protection test have been made. Mishulow, Cohen, and Rake[13, 15] have published preliminary reports in this field.

ANTITOXIN

Within the last few years an antitoxin for the treatment of meningococcic infection has been developed by Ferry,[16] by immunizing horses with toxic filtrates of broth cultures of meningococci. Some excellent results have been reported to have followed its use[17] (Hoyne, Banks). Various lots of antitoxin undoubtedly vary in efficacy, as do the various lots of the usual antibacterial serum, and this will result in conflicting reports of its value until such time as its standardization becomes more satisfactory. Toxin-antitoxin neutralization has not been demonstrated successfully in laboratory animals, nor do the antitoxins contain sufficient demonstrable antibodies to allow the use of arbitrary test-tube methods. On the other hand, many lots of antitoxin protect mice well against meningococcus infection. Thus far the only method of standardizing the antitoxin is by the partial neutralization of skin tests in human beings. The ideal serum should perhaps be both antibacterial and antitoxic.

Methods of Administering Serum

After a good serum has been prepared and standardized, how should it be given? There has been much discussion on this question and it is difficult to observe any rules, since any case may seem to be a law unto itself. This probably accounts for the fact that the person who is most successful in treating meningitis is usually the person who has had to handle a great deal of it. All are agreed that much depends on its being given as early as possible. Intraspinal therapy has long been most common. Its chief advantage has been that it enables the serum to come into direct contact with the meninges. If, as is commonly thought, the serum acts directly on the meningococci, this would indeed seem to be the most rational mode of administration. Some physicians feel that the serum does not always reach the infection, and that with a purulent and viscid spinal fluid the serum remains in the spinal canal where it was injected and is drawn out again when the next spinal tap is made.

A factor often overlooked is the toxicity of horse serum for the meninges. Acute and fatal meningitis is produced in guinea-pigs and rabbits by intracisternal injection of very small amounts of many normal horse sera. There are instances on record of "aseptic meningitis" following intraspinal injection in human beings. A really excellent serum may apparently do so much good that the irritation that it causes may be a minor consideration, but if such serum therapy is carried on too long the continued irritation may delay the patient's recovery. According to some very excellent clinicians it is almost as important to know when to stop giving serum as to know when to start it.

Intravenous serum therapy, both in combination with intraspinal therapy and alone, is being used more and more often. Since meningococcus meningitis usually begins as a septicemia and usually with evidence of a severe toxemia, intravenous administration of serum would seem to have a rational basis. The usual procedure is to dilute the serum greatly with physiological saline or glucose solution before injecting it intravenously, and some physicians make it a rule to add adrenalin also. Since meningitis patients often become very dehydrated this large amount of fluid serves an additional purpose. Caution is exercised in administering serum by this route until it has been determined that the patient is not hypersensitive to horse serum.

Since it is not entirely certain how much of the serum that is given intravenously reaches the meninges, a combination of intravenous with intraspinal therapy is most often employed. But some clinicians[17] are warm advocates of the intravenous method alone. They believe that by avoiding the irritating effect of serum on the meninges lumbar puncture to relieve increased pressure does not have to be done so frequently.

Value of Sulfanilamide

Since sulfanilamide and its related compounds have been shown to be so useful in streptococcus infections, its effects upon other microorganisms have been investigated. Buttle, Gray and Stephenson,[18] Proom,[19] and Rosenthal, Bauer and Branham[20] have found sulfanilamide to exert a marked curative action in mice infected with meningococci. Disulfanilamide prepared by Bauer,[20] has been found to be more effective than sulfanilamide, and less toxic although also less soluble.

A comparison of the curative action in mice of sulfanilamide with that of polyvalent antimeningococcic serum has indicated a marked difference in individual strains of meningococci. With some strains the drug was more effective; with others the serum was more effective; and with still others the drug and the serum were equally effective. This led us[21] (Branham and Rosenthal) to investigate the combined action of the drug and serum. It was found that with all strains of meningococci that were tested in mice the combination was far more effective than either alone. The curative action was more than could be accounted for by the sum of the effect of the two agents—there seemed to be some kind of synergistic action. These observations have been confirmed by Brown.[22]

Several reports of the successful use of the drug alone in clinical cases of meningitis have appeared in recent journals. No reports of cases treated with both drug and serum have yet been published, but such treatment is being used in several places. I have seen at least 15 cases and have been told of others in which this combined therapy has been employed, and the results have been very promising. Among these 15 cases there was 1 death. This patient was a 50-year-old man with heart complications who was admitted to the hospital in coma from which he never aroused. Before allowing ourselves to become too enthusiastic about the clinical use of this combined drug and serum therapy we must remember that this is not an epidemic period and that relatively mild cases are to be expected; and that, with the exception of the 1 fatal case, the patients receiving this treatment were in a decidedly favorable age group, i.e., 12 to 25 years old.

Conclusions

It is becoming more and more evident that it is necessary to use cultures of meningococci which are good antigens in order to make good serum. The best antigens may not necessarily be the most recent or the most virulent strains. Just how such strains are to be chosen is a subject of much study at the present time.

Some better way of standardizing serum than the commonly used agglutination test is important. Good sera do seem to have a high agglutinin content, but not all good agglutinating sera have an equally useful effect therapeutically.

At the present time a mouse-protection test seems promising. There are so many variable factors involved in such a test that standardization of the technic is difficult but will be necessary if such tests are to be compared with each other.

The relation between the protective action of any given serum for mice and for man can be known only through the help of the clinician. Every lot-number of serum is different. Each represents a pool of serum in different proportions from several different horses. Each has passed the standardized agglutination test required by the United States Government for its release for distribution. But all do not help the patient equally. Sometimes one will be more helpful in one case, and another in other cases. Occasionally, one will seem particularly good with all patients. What constitutes this difference? These serums are now all being subjected to intensive laboratory study. If the clinician can require the lot-number of every serum used to be recorded on his patient's chart as a matter of record, much useful information about the clinical value of the serums may be obtained, and compared with the laboratory findings. Through such a collaboration we may perhaps some day find out just what constitutes a good antimeningococcus serum and how to make it.

At the present time it seems likely that certain drugs may prove to be useful adjuncts to serum in treating meningococcus infections.

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CERTAIN PHASES OF THE PHARMACOLOGIC PROPERTIES OF SULFANILAMIDE*

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The remarkable discovery of the effectiveness of certain compounds containing the sulfonamide group against experimental and clinical infections with B-hemolytic streptococci and certain other bacteria has opened an entirely new era in bacterial chemotherapy. Sulfanilamide (para-aminobenzenesulfonamide) has been the compound most widely used in this country and for certain reasons appears to be at present the compound of choice. Any information concerning its pharmacologic properties is not only of interest but of vital importance for the best therapeutic use of the drug.

In a study of the pharmacologic properties of any chemotherapeutic agent, three lines of investigation are important; namely, the effect of the drug on the infecting organism *in vitro*, the effect of the drug on the infecting organism *in vivo* in experimental animals, and the effect of the drug on the host organism. It is only with certain aspects of the last of these that this report will be concerned.

Toxicity

The first question which should concern the pharmacologist with regard to a drug suggested for therapeutic use is its toxicity. Studies can be made upon animals of various species to determine this, but it must be realized that caution should be used in transferring the results of such toxicity studies to the human subject.

A study of the acute toxicity of sulfanilamide has been made upon mice because large numbers of these animals can be used. Our studies indicate that for sulfanilamide given to mice by mouth the medial lethal dose (the dose killing 50 per cent of the animals) is 3.8 grams per kilogram. In addition, the data indicate that 0.9 gram per kilogram will probably kill one mouse in 10,000, while to kill 99 per cent of the animals about 11 grams per kilogram would probably be required. Additional experiments on acute toxicity have been carried out on dogs and rabbits. Doses of sulfanilamide up to 0.5 gram per kilogram by mouth rarely cause noticeable symptoms, while a dose of 1 gram per kilogram gives definite symptoms in most dogs. These are nausea, vomiting, diarrhea, excitement, later ataxia and incoördination, and still later rigidity, coma and hypesthesia. The early stages of the poisoning resemble closely those seen in dogs under the influence of large doses of ethyl alcohol, while the latter stages are very similar to those seen in decorticated dogs. Complete recovery appears to take place after 10 to 12 hours. With doses of 2 grams per kilogram practically all dogs show symptoms similar to those stated above, and an occasional animal may die. In rabbits, doses of 1 or 2 grams per kilogram give rise to the same type of symptoms as seen in dogs.

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* Read before the Academy of Medicine of Washington, D. C., November 17, 1937.

Experiments on the chronic toxicity of sulfanilamide have been carried out on dogs and rats. Two dogs were given 0.2 gram per kilogram of sulfanilamide per day for a period of 72 and 128 days, respectively. These animals showed no symptoms or abnormalities. At the end of the period the tissues of the animals were taken for microscopic examination and found to be essentially normal. Since the growth curve of rats is very easily affected by toxic substances, we have studied the effect of continuous administration of sulfanilamide on growing rats. The administration of doses of sulfanilamide amounting on an average from 0.5 to 1.0 gram per kilogram per day did not affect the growth curve of rats. All the animals were sacrificed at the end of the experiment and none of the animals receiving sulfanilamide showed any pathological lesions on histological examination of the tissues.

The conclusion to be drawn from these animal experiments is that sulfanilamide is a substance of relatively low toxicity but is by no means completely devoid of toxicity. The variability in toxic effects exhibited by the animals is not extremely great.

As is well known certain toxic effects of the drug have already been reported in patients under treatment. These toxic effects are as follows: cerebral symptoms (nausea, headache, excitement, and confusion), clinical signs of acidosis, cyanosis, fever and skin rashes, acute hemolytic anemia, and possibly agranulocytosis. The cerebral symptoms seen in man are to be expected from the symptoms seen in dogs after large doses of sulfanilamide. Acidosis has been produced in dogs from large doses of the drug. Cyanosis, so frequently observed in patients after prolonged administration of the drug, has been ascribed by many workers to sulfhemoglobin or methemoglobin formation. In a recent study of a few patients our group was able to show that the oxygen capacity of the blood was not appreciably lowered by the cyanosis and obtained evidence that methemoglobin or sulfhemoglobin formation was not the main cause. These experiments would indicate that cyanosis is not necessarily a symptom demanding discontinuance of the drug. The acute hemolytic anemia appears to be a real idiosyncrasy and is a serious toxic manifestation of the drug.

The general conclusions to be drawn from our animal experiments in toxicity and from what is known of the toxic action of the drug in patients at present are that the drug should be used only when definite therapeutic indications exist and that it must not be given indiscriminately on account of the danger of a serious toxic reaction in a hypersensitive individual or of idiosyncracies of a serious nature.

ABSORPTION AND EXCRETION EXPERIMENTS

Another question of prime importance in considering a drug designed for therapeutic use is the question of its absorption and excretion, with particular reference to any chemical changes which the drug may undergo in passing through the organism. A study of this sort has recently been made with sulfanilamide. In dogs, sulfanilamide is readily absorbed and excreted apparently unchanged in the urine. A study of blood curves after the oral ingestion of moderate doses (0.05 to 0.2 gram per kilogram), as well as direct determination of absorption in sacrifice experiments, indicate that the drug is nearly completely absorbed in 3 to 4 hours. In rabbits administration of the drug by mouth may lead to the excretion of only small amounts of the unchanged drug in the urine, the remainder being a conjugated form which has been proved to be the acetylamino derivative of sulfanilamide. In the human being the study of blood concentration curves after oral administration indicates that absorption of the drug is similar to that found in dogs, but that acetylation occurs as in the rabbit, and the drug is partially excreted in this form. In several patients with decreased renal function it has been found that the drug is eliminated much more slowly than in the normal.

Acetylsulfanilamide which is formed from sulfanilamide in both the rabbit and man is practically inactive against B-hemolytic streptococcus infections in mice. It is somewhat more toxic for animals than sulfanilamide. Only relatively small amounts of this acetyl derivative occur in the blood of patients being treated with the drug.

The conclusion which is to be drawn from these absorption and excretion experiments in animals is that in administering the drug one should proceed along lines similar to those which have proved valuable in the administration of digitalis. It appears important to reach and maintain a certain concentration of the drug in the blood and tissues. To do this quickly one should give an initial dose large enough to obtain the desired blood level in 3 to 4 hours and then maintain this level with small doses given every 4 hours. Patients with decreased kidney function should be given the drug with great caution. A determination of the amount of drug in the blood has been valuable in the treatment of patients. It appears at present that administration by mouth is the method of choice when this is feasible.

Distribution in the Organism

An analysis of our blood concentration curves indicate that only a small amount of the absorbed drug is present in the blood stream. Large amounts are evidently taken up by the tissues. To investigate this point, a study has been made of the distribution of sulfanilamide in the organism of the dog. The drug is found to be present in all the tissues of the body with the exception of bone and fat in about the same concentration as in blood. In various normal and pathological fluids of the body the drug is present in only a slightly lower concentration than in the blood. The early experimental work on mice indicating the possible value of sulfanilamide in meningococcus infection led us to make a careful study of the distribution of the drug between blood and cerebrospinal fluid. In dogs, after administration by mouth, one finds that after a few hours the concentration in spinal fluid parallels and is slightly lower than that in the blood. That this holds for man also has been shown by examining spinal fluid and blood of an essentially normal individual as well as one with meningococcus meningitis during treatment with the drug. This ready diffusibility and equal distribution of sulfanilamide to all parts of the organism are important factors in making it a successful bacterial chemotherapeutic agent.

Excretion

Since sulfanilamide is excreted from the body almost entirely by the kidney it is important to learn something about its mode of excretion. This has been done in dogs and to some extent in human subjects and our results indicate that sulfanilamide is excreted very much like urea but is reabsorbed by the tubules to a greater extent. Since the clearance of sulfanilamide is definitely increased by increased rate of urine flow, it would appear logical to treat overdosage or toxic effects in man by forcing fluids.

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THE USE OF SULFANILAMIDE IN GENITO-URINARY SURGERY*

CLINICAL OBSERVATIONS AND RESULTS

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When our work with Prontylin began in December of 1936, it was immediately shown to exert a favorable action against the gonococcus, so favorable in fact that we were at first loathe to accept the results, particularly in view of past disappointments in other types of therapy. It soon became apparent that the drug was not limiting its effect on this organism alone, but was also extremely effective against some other infections of the urinary tract. Investigations were then begun to determine the versatility of the preparation in its application to the practice of urology. It was shown that the organisms belonging to the gram-negative bacillary group, particularly Escherichia coli, Aerobacter aerogenes and Proteus responded splendidly, and the gram-positive Staphylococcus aureus to a lesser degree. A negative action against Streptococcus fecalis was shown. It has been my observation that, although sulfanilamide exerts no sterilizing effect in certain types of infection, there is a definite amelioration of symptoms during the time the drug is taken. Since it has been clearly shown that sulfanilamide is most effective in urine of high pH it should be very effective in alkaline infections of the urinary tract with Proteus ammoniae, in the treatment of which acidifying remedies have been disappointing. It appears that varying strains of the same organism respond differently to treatment and require either larger dosage over longer periods or demand a combined treatment.

It has been shown by microscopic and cultural studies that the previously mentioned organisms, which are the usual infecting agents, are either destroyed or controlled during the administration of sulfanilamide and, to a lesser degree, of Prontosil administered parenterally, through the bactericidal effect developed in the urine.

Bliss and Long, in their research to determine the action of the drug, have shown rather conclusively that in certain infections sulfanilamide is bacteriostatic and that by this action rapid multiplication of the organism is inhibited, an effect which allows phagocytosis to progress unimpeded before it can be destroyed by the toxic products of the organism. The richness of the blood supply would influence to a large degree the rapidity of clarification of the part infected.

Since sulfanilamide is bactericidal in the urine against the usual bacterial invaders involved in urinary-tract infections and develops a bacteriostatic effect in the tissues, it was considered reasonable to use it prophylactically and therapeutically in cases of surgical treatment of the urinary tract in which so frequently drainage with subsequent infection is involved. A study was begun in April, 1937, of which this is a preliminary report. The cases in which this treatment was followed include those of transurethral resection of the prostate, suprapubic prostatectomy and resection of bladder tumor, nephrotomy, pyelotomy, ureterolithotomy, and nephrectomy when an ordinarily clean wound became soiled. Observations and studies of these cases leads to the belief that the patients were benefited in every instance. Although sterilization was not obtained in every case, the infections were sufficiently controlled to minimize their effect and to allow for more rapid ultimate sterilization postoperatively.

It has been observed in the surgical treatment, particularly of the prostate gland, that, although the urine during the drainage period was infected, the degree of infection was markedly reduced with the administration of Prontosil and sulfanilamide. The drainage, in many instances, appeared to be grossly clear and seldom became cloudy until the sinus closed. By the time this occurs, the traumatized tissue can have adjusted itself to the changed environment and afford protection against deep invasion by bacteria. This is true of the kidneys as well as the bladder and the structures surrounding them. There is absence of the objectionable odor of infected urine in the prostatics and absence of cellulitis about the sinus opening which appears to granulate much more rapidly and neatly than previously. The most striking observation is the rapid cessation of urine drainage through the suprapubic opening after removal of the tube. The small pustules around sutures, so frequently observed in infected wounds, seldom appear, and surgical wounds of the urinary apparatus in general show a greater desire to heal by first intention. In transurethral resection infection does not appear to be as virulent, and although present, it is apparently held in restraint and the urine subsequently clarifies more rapidly. With this there has been a more pleasant convalescence and perceptible shortening of hospital days. That traumatized tissue is permitted to become organized and granulate unhampered by infection and its associated toxic influence may be the answer. The degree of concentration of the drug in lymph and the part it thus plays in wound repair is under investigation. Sinus tracts containing drainage tubes are not bathed in the usual offensive purulent material as a rule, but have instead a rather free bath of serous substance, varying from slightly opaque to colorless. Suprapubic sinuses have been observed to cease draining urine as early as the third day following removal of the tube, and although not completely closed by granulations are filled with, and exude, this fluid.

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* Abridgement of paper read before the Academy of Medicine of Washington, D. C., November 17, 1937.

With this type of treatment the temperature in most instances rarely ascends beyond 100°F. postoperatively for from 6 to 12 hours, rapidly subsiding to a normal level. It is thought that the traumatized prostatic bed and capsule are protected against massive invasion by infection during the time it is being sealed off, further destruction by toxic substances and necrosis being avoided. Sulfanilamide has been recovered from the prostatic secretion, and it is quite likely its bed and adjacent structures would likewise be found to contain it.

It has been suggested that the use of this preparation might have a tendency to prolong surgical bleeding. If it has an effect of this sort, it has not been demonstrated in this group. It is, however, considered advisable in these cases, as it should be in any case in which surgery is contemplated, to obtain a study preoperatively of the cellular elements of the blood, as well as bleeding time and coagulation time.

The best effect has been observed with the use of sulfanilamide on one or two preoperative days and the parenteral use of Prontosil on the immediate postoperative days, with sulfanilamide being used again subsequently. No exact management can be suggested, since the administration is as yet decided by the general clinical appearance of the individual.

A proper concentration of the substance in an adequately alkaline urine is essential to successful treatment, particularly if the infection involves the urine. Estimation of the concentration after the method of Marshall can be easily executed, but it is felt that until a simple laboratory method has been devised applicable to the physician's own laboratory the administration of sulfanilamide in general practice will continue to be a method of trial and error, a method that will account for many failures.

It has been shown that the free drug and not the conjugate is effective and that to obtain the maximum bactericidal action a concentration of between 20 and 30 mg. per 100 cc. of urine of a pH between 7 and 8 is necessary. Concentration and pH have been observed at times to be below the usual requirements and a successful result ensue, but the proper factors should be sought to obtain that effect. Side-effects are seldom noted in patients during complete bed rest even with maximum therapeutic doses.

It is unwise to use the drug to the exclusion of other therapeutic measures. It should not be prescribed except in the presence of the organism against which it has been shown to be effective. Clarification of the urine and alleviation of the associated symptoms without adequate study of the upper urinary tract and bladder is detrimental to the best interests of the patient, since in most instances pyuria is but a single manifestation of other pathologic lesions.

THE MORBID ANATOMY OF BUNDLE-BRANCH BLOCK*†‡

REVIEW OF THE LITERATURE, REPORT OF SIXTEEN CASES WITH NECROPSY EXAMINATIONS, AND REPORT OF SIX CASES WITH DETAILED HISTOLOGIC STUDY OF THE CONDUCTION SYSTEM

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Introduction

The original concept of the electrocardiographic manifestations of bundle-branch interruption, as developed by Eppinger and Rothberger (1910)[1] and confirmed by Rothberger and Winterberg (1913),[2] Lewis (1916),[3] Wilson and Hermann (1921),[4], and others, has been attacked in the past few years to the extent that "right" has been changed to "left" and vice versa. The main mass of evidence in favor of the original concept was accumulated as the result of experiments on animals, mainly dogs, in which interruption of part or all of one or the other bundle branch, usually by surgical section, was produced in normal hearts. The diagnosis of bundle-branch block was then applied to cases in the clinic in which electrocardiograms resembled those made experimentally.

Results of Physiological Experiments on Bundle-branch Block

When a bundle branch was cut artificially there resulted an increased amplitude of the ventricular deflections, a preponderance of the ventricle containing the non-mutilated bundle branch, an increased spread of 0.03 to 0.04 second in the QRS complex with notching of that complex, and opposition in direction of the T wave to the main ventricular complex. There was a difference, however, between the electrocardiographic picture produced by the section of a bundle branch in the dog and the electrocardiographic picture assumed by analogy to represent pathologic interruption of the bundle branch in the human heart. In the dog the chief initial deflections were usually in the same direction in the three conventional leads, and the experimental picture was termed concordant. In man, however, the electrocardiographic picture termed bundle-branch block was usually of the discordant form, i.e., if the chief initial complex was upright in lead 1, it was down in lead 3, whereas in lead 2 it might be upright, down, or biphasic. This difference was explained by the differences in the anatomic course of the left bundle branch, the axis and position of the heart, the shape of the heart and the thickness of the two ventricles.

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‡ In two parts, of which this is part 1. Part 2 will appear in the February issue.

In man, the criteria established by Carter (1914)[5] for the diagnosis of bundle-branch block were as follows:

1. Widening of the QRS complex beyond 0.10 second, with notching.
2. Preponderance of the ventricle whose bundle branch is healthy, i.e., right or left axis deviation as the case might be, or, in other words, the dextrocardiogram with left bundle-branch block and the levocardiogram with right bundle-branch block.
3. Exaggeration of the amplitude of the ventricular deflections (QRS and T).
4. T waves directed oppositely to the initial ventricular deflections.

If the initial ventricular deflection was upright in lead 1 and downwardly directed in lead 3, right bundle-branch block was assumed to exist; if it was down in lead 1 and upright in lead 3, left bundle-branch block was predicated. The former was much more commonly observed in patients than the latter.

This concept was in perfect accord with contemporary concepts of ventricular preponderance and premature contractions.

As early as 1920, however, Fahr,[6] on purely theoretical grounds, expressed doubt as to the validity of the interpretation of bundle-branch block, as well as the curves of ventricular preponderance, and suggested that the terms right and left should probably be interchanged. The same year Oppenheimer and Pardee[7] stated that they found the interrupting lesion in the branch opposite the one anticipated when they examined two hearts histologically.

In 1930, more serious doubt began to develop in America of the accuracy of interpretation as to which is the levocardiogram and which the dextrocardiogram in the case of the human being, when Barker, Macleod and Alexander[8] published curves exactly opposite to those previously obtained in animals. These writers were able by a fortunate circumstance to make electrocardiograms of extrasystoles (ectopic contractions) produced by stimulating directly the exposed heart of a human subject. Wilson and these original investigators[9] suggested that the common type of bundle-branch block (formerly called right bundle-branch block) is in reality due to obstruction of the excitation wave along the left bundle branch, whereas the unusual variety (the reverse picture electrocardiographically) is due to a block of the right bundle branch.

Later, Marvin and Oughterson (1932)[10] and Vander Veer (1933)[11] made similar observations on exposed human hearts and in general confirmed their results. However, Lundy and Bacon (1933)[12] in the same type of experiments found that when the apical region of the left ventricle was stimulated the extrasystoles confirmed the new conception, but when the basal region of the left ventricle was stimulated the major deflection was upright in lead 1. Also, Prinzmetal, Oppenheimer and Dack (1937)[13] stimulating electrically the upper lateral region of the left ventricle of the exposed heart of a patient with constrictive pericarditis whose curves showed right axis deviation due to displacement of the right ventricle forward and to the left, obtained extrasystoles with small upright main complexes in lead 1 and large upright main complexes in lead 3; whereas, after closure when they tapped the thin chest wall overlying the right ventricle at four different points they found the main ventricular deflections of the resulting extrasystoles inverted in lead 1 and upright in lead 3 in three instances and the reverse in the fourth instance. These authors concluded that the new conception can be safely applied only in the presence of a normal electrical axis or of left axis deviation. They were aided in this belief by experimental work performed on cats by Abramson and Weinstein (1936)[14] who showed that the direction of the major ventricular complex in lead 1 changes at a line of transition which does not strictly divide the left from the right ventricle and that a shift in this line of transition occurs with rotation of the heart and alteration of the electrical axis.

Wilson, Macleod and Barker (1931)[9] soon fortified the new terminology they proposed by using semi-direct leads in dogs in which one or the other bundle branch had been severed and stimulating the ventricles separately by an exploring needle held close to their surface.

About the same time Roberts, Crawford, Abramson and Cardwell (1932)[15] in experiments in which they divided the bundle branches in cats' hearts, obtained both concordant and discordant curves in which when the right bundle branch was cut the chief initial deflection was downward in both types, but in lead 3 the deflection was upward in the discordant type. After cutting the left bundle branch, exactly opposite results were obtained. These results indicated to them that the important lead to study for determining the location of the lesion is lead 1.

By means of a method of analyzing the electrocardiogram by a fusion of the three leads into a single curve or monocardiogram Mann (1931)[16] was able to show that in right bundle-branch block the electrocardiogram has an inverted main deflection in lead 1, while in left bundle-branch block the main deflection is upright in lead 1. As early as 1920 Mann[17] had come to the belief that the original terminology for bundle-branch block was incorrect.

In human cases in which bundle-branch block had been diagnosed Nichol (1933)[18] found that in instances in which the chief initial deflection was up in lead 1 and down in lead 3 (right bundle-branch block, original terminology) the subclavian pulse was definitely delayed, and he concluded that the curves really signified left bundle-branch block.

By means of serial precordial leads Wilson, Johnston, Hill, Macleod and Barker (1934)[19] in patients with the electrocardiographic curves formerly called left bundle-branch block, obtained curves in which the precordial leads from the right side of the precordium showed a very late chief upstroke, whereas precordial leads from the left side of the precordium showed an early chief upstroke approximately synchronous with the peak of R in lead 1. These curves were strikingly similar to those which they obtained by the same method of leading after section of the right bundle branch in dogs.

Wolferth and Margolies (1935)[20] by studying graphically the time relations of various events associated with right and left ventricular contraction in a series of patients whose electrocardiograms conformed rigidly to accepted criteria for the common type of bundle-branch block, found that ejection from the left ventricle is significantly delayed. Checking the methods employed by Wolferth and his co-workers, Katz, Landt and Bohning (1935)[21] urged caution in drawing such definite conclusions and pointed out that an interval of more than 0.18 second from the beginning of the QRS complex to the onset of ejection of the left ventricle as given by the rise of the subclavian arterial pulse suggests the probable presence of delay or obstruction of the impulse along the left bundle branch but does not exclude the simultaneous presence of depression of function of the right bundle branch. They concluded that the direction of the QRS complex is determined by other factors besides the block and cannot be used to locate the bundle branch involved in intraventricular block. They suggested describing intraventricular block as (1) common bundle-branch type, (2) uncommon bundle-branch type, or (3) indeterminate types.

Kountz, Prinzmetal, Pearson and Koenig (1935)[22] cut the bundle branches of revived human hearts and found that a lesion of the right bundle branch is characterized by a deflection that is downward in lead 1 and upward in lead 3, and that section of the left bundle branch produces the opposite picture. Also, with the heart in normal position they found that extrasystoles were similar to those described by Barker, Macleod and Alexander.

By artificial stimulation of the endocardium of the ventricles of the dog Marcu (1936)[23] regularly produced extrasystoles with images the reverse of those originally designated as left and right ventricular premature contractions; usually the curves were of the discordant type, but occasionally they were of the concordant type of Rothberger and Winterberg.[24]

Because of this mass of experimental evidence that has accumulated, most American cardiologists have accepted the new terminology for the classical electrocardiographic curves designated bundle-branch block. There are still, however, many types of electrocardiographic curves suggestive of bundle-branch block but not typical of either classical left or right branch block. These are undoubtedly instances of intraventricular block, but the exact mechanism of their production and their pathogenesis are in doubt.

Apparently most European cardiologists still use the original terminology. Rothberger[25] is the main champion of this school of thought. In 1933 he published an extensive dissertation on the subject in which as a result of numerous animal experiments and with the aid of Mahaim's[133] histological studies he defended the original concept. However, he stated that the only way to settle the question to the satisfaction of all is by means of systematic, expert histological studies of the entire conduction system of the hearts of patients whose electrocardiograms showed evidence of bundle-branch block.

HISTOPATHOLOGIC STUDIES OF BUNDLE-BRANCH BLOCK IN THE LITERATURE

Thus far I have discussed "bundle-branch block" purely from the standpoint of the experimental evidence of its nature. Just as the concept from this point of view has varied so much, likewise the data concerning the histopathologic basis of this problem have been conflicting, incomplete and relatively scanty. Much less certainty, in fact, exists on this point because of the tremendous amount of labor required in the histologic study of the conduction system of one heart, the technical difficulties involved, and the amount of experience necessary for evaluation of the findings. Very few men have had extensive experience in this field of research, and even their conclusions are extremely at variance.

To study every portion of the microscopically recognizable portion of the conduction system requires usually between 4,000 and 6,000 serial sections, depending mainly upon the size of the heart. Furthermore, in order for the reader to be able to judge of the merits of the work, the writer must not only carefully describe his findings but should also reproduce photomicrographs and electrocardiograms.

A careful review of the literature by Mahaim[133] revealed up to 1930 only 19 cases involving the electrocardiographic diagnosis of bundle-branch block in which anatomic studies had been made. Mahaim considered only 3 of these cases sufficiently well studied histologically to be accepted as convincing (Eppinger and Stoerk[134] 2 cases, 1910, and Kauf[135] 1 case, 1924) and a fourth case as probably correct (case of Fredericia and Möller, 1918[136]). The authors stated that lesions were found in the right bundle branch and not in the left; the electrocardiograms had shown right bundle-branch block according to the original terminology. Even with Mahaim's rigid criteria these 4 cases are open to criticism. The 2 cases of Eppinger and Stoerk of chronic aortic valvulitis with congestive failure were presented without photomicrographs and with very brief histologic descriptions; furthermore, the left bundle branch was said to be entirely unaffected in both, a doubtful thing, since it must be rare to find one branch seriously diseased without some involvement of the other. Kauf's case was one also of aortic valve disease (stenosis with calcification); the description of the microscopic study was very brief, and the left bundle branch was said to be entirely normal. In the case of Fredericia and Möller of degenerative heart disease there had been frequent changes in the form and direction of the ventricular complexes but no definite curves of bundle-branch block of either side. The authors described briefly serious fibrosis of the left bundle branch but none of the right, a remarkable finding in view of the electrocardiographic features.

Among the other 15 cases reviewed by Mahaim, there were 3 without histologic studies of the conduction system (2 cases of Lutembacher (1926) [137, 138] apparently of coronary artery sclerosis, both presenting disturbances of auriculoventricular conduction and 1 with right, the other with left bundle-branch block; 1 case of Parkinson and Bedford (1928)[139] of multiple myocardial infarcts with the electrocardiographic curves of left bundle-branch block).

Four cases of Carter[5] were very incompletely studied histologically by Cohn and Lewis

(1914),[140] largely because the tissue sent them was not adequate. The case of chronic aortic and mitral valvulitis of von Wyss (1911)[141] studied histologically by Gerhardt[142] showed disturbances of auriculoventricular conduction with the curves of left bundle-branch block, but only 1 lead of the electrocardiogram was reproduced; Gerhardt found partial lesions of both branches. The case was therefore inconclusive.

Carter[50] in 1918 revised his ideas somewhat concerning bundle-branch block as the result of a study of a case showing electrocardiographic complexes similar to those described by Oppenheimer and Rothschild[28] as "arborization block." In general form the curves resembled those of right bundle-branch block but with low amplitude except during paroxysms of tachycardia, when the amplitude was high. The histologic study, made by van der Stricht, was not complete, since only a number of isolated blocks of tissue were examined. These showed localized areas of fibrosis in the main stem and posterior division of the left bundle branch.

The 2 cases of Oppenheimer and Pardee (1920)[7] were described in abstract form with extremely little detail and no illustrations. One was said to be a case of left bundle-branch block with lesions confined to the right bundle branch, and the other was said to be a case of right bundle-branch block with lesions confined to the left bundle branch. From these findings the authors questioned the accuracy of interpretation of electrocardiograms of bundle-branch block.

Drury (1921)[143] made a very incomplete histologic study of a case of auricular flutter with curves suggestive of right bundle-branch block of very low voltage due to chronic coronary artery occlusion.

Waldorp's[144] case (1924) could hardly be called one of bundle-branch block, and the histologic study was not convincingly described.

Wenckebach and Winterberg (1927)[145] described a case with intermittent auriculoventricular heart block of varying degrees and with variable ventricular complexes of which that of right bundle-branch block predominated. The histologic study showed multiple lesions of the left bundle branch, but the right branch could not be studied because of technical difficulties.

Marvin (1928)[146] described a case of left bundle-branch block with tachycardia, in which after overdosage of digitalis crises of polymorphic ventricular tachycardia of the alternating type occurred. The histologic study of the large, probably hypertensive, heart was incomplete.

The case of Taussig (1929)[147] could not properly be called one of left bundle-branch block because the electrocardiogram showed ventricular tachycardia. Also, the histologic study was very incomplete.

Agostoni (1929)[148] studied a case in which the electrocardiogram showed left bundle-branch block. By studying serial sections he found patchy fibrosis of the myocardium with the bundle of His and the left bundle branch normal but the right bundle branch interrupted at 2 points by fibrous lesions.

Hill (1930)[59] studied 2 cases of left bundle-branch block histologically. In 1, however, he lost the right bundle branch 3 mm. below its origin and found no lesions in the conduction system except a few small round cells in that branch. In the other he lost the right branch in its upper half, but he thought it divided into 2 branches before he lost it, 1 branch passing deeply into the myocardium. He did not find only lesions in the conduction system, but there was diffuse myocardial fibrosis.

In 1930 Oppenheimer and Oppenheimer[149] reported in abstract form their histologic findings in 10 cases of intraventricular block, "including bundle-branch block and arborization block." Cases III and X were the cases previously reported by Oppenheimer and Pardee.[7] There were 5 cases of bundle-branch block, 2 being cases of typical bundle-branch block of the common discordant type and 3 being cases with electrocardiograms approaching this type but not perfectly characteristic. In all 5 cases the histologic lesion was found on the left side and the right branch was intact except for a partial lesion in 1 case. Four other cases were instances of "arborization block." In all 4 the lesion was found involving the left bundle branch, "while the right branch was found to be intact throughout its course." The remaining case was 1 of "well-marked intraventricular block of the exceptional discordant type, in which the main ventricular deflection was directed downward in lead 1 and upward in lead 3." "The lesion in this case was found solely in the right bundle branch, the left branch being normal throughout its course." These results unequivocally supported the new concept of bundle-branch block. Very surprisingly, however, in all but one case the opposite bundle branch was intact. Further more, these authors did not publish clinical histories, electrocardiograms, necropsy reports, descriptions of the histologic studies or photomicrographs of any of the cases.

In 1931 Mahaim's[133] splendid volume on the organic diseases of the conduction system was published. Mahaim's thorough study of 8 cases of "bundle-branch block" (7 right and 1 left according to the original terminology) supported the original terminology, but in every case the lesions, mainly fibrosis due to vascular disease, were present in both bundle branches although more nearly completely interruptive in the branch assumed to be blocked on the basis of the electrocardiogram. Electrocardiographically these were all cases of so-called intraventricular block, but most of them differed from the original clinical criteria of bundle-branch block, mainly in regard to amplitude, spread of the QRS complex and notching. In 2 cases the amplitude was very small, the electrocardiograms resembling those of "arborization block." One case (observation XI) was an instance of complete heart block with ventricular tachycardia and right bundle-branch block. In cases V, VI, VIII, IX and X there was a deep S deflection in lead 1. The only important point open to doubt in Mahaim's study is the interpretation of the branch more severely affected, since serious lesions were present in both branches in all of the cases. Mahaim stressed the importance of studying the branches by serial sections as far down as they can be recognized, since he found the important lesion in some of the cases in the lower most part of the right branch. He made a strong point of the blood supply of the bundle branches, emphasizing the common source of supply of the right branch and the anterior division of the left, explaining thus the bilaterality of lesions and the escape of the posterior division of the left branch in many cases. Although Mahaim's work further beclouds the problems involved, we are greatly indebted to him for his careful review of the literature, for pointing out the necessity of thorough histologic study of the conduction system, for emphasizing the usual bilaterality of lesions and their frequent vascular pathogenesis, and for his thought-provoking deliberations.

In 1935 Mahaim,[150] reporting a study of 2 cases of right bundle-branch block, reviewed his previous cases and eliminated all but 2 of his 7 cases as being indecisive. He excluded observation V because of the short period of clinical observation ($2\frac{1}{2}$ months), an elongated PR interval, and lesions of the common trunk. Observation VI was questioned because of the short period of clinical control (3 weeks). Observation IX was discarded because of the short period of clinical study, the fact that only 1 tracing had been made, the wide QRS complex, and the multiple and bilateral lesions. Observation X was eliminated for the same reasons plus the presence of auricular fibrillation. Observation XI was excluded for similar reasons, "total bilateral lesions rendering the case problematical." Finally, he discarded observation XII because of the single tracing and the extended bilateral lesions without complete interruption of the left bundle branch, which he believed the electrocardiogram indicated. His criteria for determining which bundle branch influenced the form of the electrocardiogram in "bundle-branch block" had become much stricter. He considered as essential (1) prolonged clinical observation with numerous electrocardiograms, (2) a constant, easily measurable and not prolonged PR interval, (3) the absence of tachycardia, auricular fibrillation, auriculoventricular conduction disturbances, and notably (4) the existence of no more than a slight prolongation of the QRS complex since increases over 0.10 second are due to extensive lesions of both bundle branches. If the anatomic lesions were clear cut, one did not have to be so rigorous about the clinical features, such as the length of the period of clinical control. He pointed out that the lesions of the bundle branches were almost always bilateral, which is the greatest source of error of interpretation, and that one can not always be sure of the conductivity of a few fibers which might appear intact in a severely diseased branch. He stressed the point that if 1 out of 10 sections showed definite lesions one should stain and study some of the intervening sections also.

His new cases are interesting. Observation I was that of a man of 31 who had severe rheumatic lesions of the aortic and mitral valves and some tricuspid valvulitis. The case had been followed 11 years. At first there was a normal electrocardiogram, then auricular fibrillation with slight right axis deviation, and during the last 6 years auricular fibrillation and right bundle-branch block with the QRS never longer than 0.10 second; the T waves were almost iso-electric. In the thorough histologic study he found severe generalized fibrotic lesions of the left branch from its origin. The bundle of His and the right bundle branch were only slightly affected. There was extensive scarring of the interventricular septum and the endocardium of the left ventricle. Observation II was that of a man of 38 who had been observed over a period of 6 months. There had existed during this time an irreducible auricular flutter with 2 to 1 block except during paroxysms of 1 to 1 rhythm brought about by effort. The heart rate was usually 120 per minute but at times was 240. There was right bundle-branch block with a QRS interval of 0.11 second. Severe mitral stenosis and tricuspid valvulitis were found at necropsy, with dilatation of the pulmonary artery and functional pulmonary insufficiency; the foramen ovale was widely patent. Complete interruption of the left bundle branch at its origin was noted, but there were also very extensive fibrous and inflammatory lesions of the right branch due to a "septitis of mitral origin." There were also serious hemorrhagic lesions of the right branch of recent origin.

In this same article Mahaim also pointed out that one must look carefully for a large offshoot of the posterior part of the uppermost portion of the left bundle branch. This branch, originally described by him in 1932, under the title of "Le block bilatéral manqué" is supposed to arise high up near the bifurcation of the bundle of His and to pass directly into the septal myocardium, so that even complete lesions of the left bundle branch a little lower would not produce bundle-branch block. In the case in which he discovered this offshoot there was active and healed septal myocarditis with complete and extensive destruction of the left bundle branch and complete interruption also of the right bundle branch, but idioventricular rhythm did not result. Instead, there was a PR interval of 0.16 second, a QRS complex of 0.14 second with low voltage and multiple notching, and small slightly diphasic T waves. The main ventricular complex was upright in lead 1 but triphasic in lead 3. The curves resembled "arborization block," and Mahaim concluded that such curves can be due to complete lesions of both bundle branches. He believed that the newly discovered connections can explain all discrepancies among various investigators and the various degrees of enlargement of QRS. The more extensive the lesion of the left bundle branch, the wider the QRS complex should be, since the excitation wave passing into the septal myocardium through the high offshoot would have a longer course to follow in the more slowly conducting myocardium until it reached healthy elements of the Purkinje system much farther down.

Meesen (1935),[152] studying the fetal calf heart, was unable to find connections through the interventricular septum between the 2 bundle branches or their network, as had been demonstrated by Cardwell and Abramson (1931)[153] and Wahlin (1932).[154] In 2 human hearts he could not verify the special superior and posterior connections of the left branch with the septum as described by Mahaim in 1, but in the other he found many very fine connections from the left branch to the septum. In 1 the curves were "arborization block" of the right bundle-branch block type. Meesen found the conduction system intact down to the ramifications and conceived that the myocardium was cut off from the Purkinje network by fibrosis. In the other the curves were those of right bundle-branch block but he found myeloid infiltration of the left branch.

For the sake of completeness one should call attention to the work of Rosenthal (1932),[155] who studied the conduction system of 5 hearts histologically but did not give details of his technic nor of his studies. In 1934 Géraudel,[156] who has made numerous but apparently incomplete microscopic studies, stated that there was no such thing as bundle branches and arborizations but that the main bundle crosses the fibrous septum and is lost immediately in the interventricular septum.

In 1936, Yater, Cornell and Claytor[110] reported 3 cases of auriculoventricular heart block due to bilateral bundle-branch lesions with detailed histologic studies of the conduction system. In case 1 the electrocardiogram showed curves of essentially supraventricular type, and there were fibrotic lesions practically completely interrupting both bundle branches. In case 2 the curves were of the left bundle-branch type, and the upper half of the entire left bundle branch was almost completely replaced by dense fibrous tissue, while about one third of the cross-section of the right branch was replaced by fibrous tissue in its upper third. In case 3 the curves showed complexes varying from right to left bundle-branch block type on different occasions; about 60 per cent of the track of the left bundle branch was replaced by fibrous tissue, and about 75 per cent of the cross-section of the right branch was likewise affected.

Remarks on Histologic Technic

An expert full-time technician can properly prepare on the average 4 to 6 hearts per year for study of the conduction system. Unfortunately, at least 1 of these hearts must usually be discarded because of technical flaws due mainly to the difficulties of making thousands of uniformly good sections of a heart.

It is best not to keep the hearts more than a few months and the 10 per cent formalin employed should not be allowed to become more concentrated. After imbedding the blocks of tissue in paraffin, soaking them in water for from 1 to 3 weeks improves the quality of the heart muscle for sectioning. There is no specific stain for the conduction system, since the fibers are structurally very similar to those of the myocardium. In fresh hearts there may be more glycogen in the Purkinje fibers, but the use of some glycogen stain, such as Best's carmine, is impractical for routine work or extensive studies. Masson's trichrome stain gives the best coloring effects for study. The myocardium and conduction tissue are red, connective tissue green. In photomicrographs the parenchyma is dark and the fibrous tissue light, with a light red filter. Van Gieson's picrofuchsin is also good but fades after a time. This stains the parenchyma yellow and the connective tissue red, and in photomicrographs the parenchyma is light and the connective tissue dark.

The use of a dissecting microscope is invaluable for orientation and for studying so many sections, although a regular microscope must also be used frequently. The use of a dictophone is time-saving for describing the sections.

It is vital to follow the bundle branches from beginning to end by means of serial sections, since one may not be able to identify them otherwise when they are the seat of lesions. This is especially true of the right branch, which is so small in diameter and so similar histologically to the myocardium that often it may not be definitely recognized in isolated sections, especially in its intramyocardial portion. It can be traced from below upward as well as from above downward, since in its lower subendocardial portion it is as easy to identify as it is from its origin in the bundle of His. However, lesions of the right branch are easier of interpretation than those of the left branch for the very reason that the right branch is so slender and readily studied in individual sections. When the left branch is diseased it sometimes happens that the isolated Purkinje fibers are difficult to distinguish from the fibers of the myocardium subjacent to the endocardium. This is especially true in the lower third of the interventricular septum, where the left branch is spreading out and dividing into smaller groups of Purkinje fibers. Purkinje fibers in the substance of the myocardium of human hearts are impossible to recognize but undoubtedly exist, just as they do in the hearts of large animals. There is considerable variation in the anatomical features of the left branch, the division into two portions about the middle of the septum, the anterior and the posterior, being often indefinite.

It is well not to make too many blocks from the septum but to make the blocks as large as possible and to include the whole thickness of the septum. Technicians complain but can usually make the sections satisfactorily if they are efficient. The branches are much more easily followed with fewer blocks. Usually three or four blocks can be cut to include the entire microscopically recognizable portion of the conduction system.

(To be continued)

THE TREATMENT OF GONORRHEAL VULVOVAGINITIS WITH CORBUS-FERRY FILTRATE*

RESULTS IN THIRTY-SIX CASES

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The gynecological section of the Children's Hospital Outpatient Department is concerned mostly with the treatment of gonococcal vulvovaginitis in prepubescence. In May, 1935, the use of Corbus-Ferry Gonococcus Bouillon Filtrate in the treatment of this condition was begun in this clinic. The filtrate contains the soluble specific gonococcus toxin recently described by Clark, Ferry and Steele[1] in their "Studies of the Properties of the Bouillon Filtrate of the Gonococcus," published in the Journal of Immunology in 1931. The gonococcus filtrate was diluted with 3 parts of normal sterile saline solution and administered by intradermal injections. The initial dose of the diluted filtrate was from 0.025 cc. to 0.05 cc., depending on the age of the child; and increased to a maximum dose of 0.20 cc.

Forty-two unselected patients received this treatment. Of this number, 36 were followed sufficiently to determine the results obtained. The other 6 cases either moved with address not known or came under the care of a private physician. The average age for the entire group was 5 years; the youngest patient was 1 year old and the oldest 10 years old. Of these, about 70 per cent were colored and 30 per cent were white children.

All cases treated with the filtrate presented clinical vulvovaginitis with gram-negative intracellular diplococci having the morphological characteristics of the gonococcus in vaginal smears.

Of the 36 cases, 18 had had no previous treatment, 6 had had soda douches for less than 1 month, and the remainder had had treatment ranging from 1 to 7 months.

Good results were obtained in 17 cases and poor results in 19. A case was considered a failure if the patient returned after a rest period of 4 weeks with a positive smear, if the smears were persistently positive, or if additional treatment was needed, such as douching or cauterization of the cervix.

In the group of cases which were successfully treated (Table 1), 8 children had received no previous treatment, 3 had had douches for 2 weeks, and the remainder had been unsuccessfully treated for a period of 2 to 20 weeks. The number of weeks necessary to obtain a first permanently negative smear varied from 1 to 14 with an average of 7. The duration of cure as of March 11, 1936, varied from 3 to 10 months with an average of 7.

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* Read before the Washington Gynecological Society, March 27, 1937.

TABLE 1

Patients Responding to Treatment

CASE NUMBER	AGE	NUMBER WEEKS TREATED BEFORE FILTRATE STARTED	NUMBER OF INJECTIONS	WEEKS BEFORE FIRST PERMANENTLY NEGATIVE SMEAR	DURATION OF CURE TO DATE OF REVIEW
	years				*months*
1	9	16	10	8	5
2	5	0	10	7	7
3	1	20	7	6	9
4	2	10	15	11	7
5	9	13	13	10	6
6	7	0	5	3	9
7	8	0	5	2	10
8	2	2	7	4	9
9	10	0	7	1	7
10	2	0	7	6	5
11	7	11	6	1	3
12	6	2	8	6	9
13	6	2	13	8	7
14	5	10	5	6	6
15	7	0	10	14	6
16	2	0	6	10	4
17	4	0	9	10	4

TABLE 2

Patients Not Responding to Treatment

CASE NUMBER	AGE	NUMBER WEEKS TREATED BEFORE FILTRATE STARTED	NUMBER OF INJECTIONS
	years		
18	5	0	12
19	5	0	11
20	7	0	14
21	6	0	10
22	8	0	11
23	2	0	6
24	2	3	5
25	3	0	10
26	4	9	8
27	5	8	6
28	6	4	4
29	5	28	8
30	4	26	12
31	6	4	6
32	6	0	8
33	1½	0	6
34	3	3	6
35	4	8	7
36	4	0	10

Of the 19 cases in which treatment was unsuccessful (Table 2), 10 patients had had no previous treatment, 4 had had douches for 3 or 4 weeks, and the remaining 5 had been treated for 2 to 7 months.

The number of injections in both groups varied from 5 to 15, with an average of 8.5.

It has always been my experience that those cases that have been treated with antiseptics are the most difficult to cure. This was also true in the present series. The child in case 2 came to the clinic with her sister who was 1 year older. She was treated with the filtrate, while her sister was given douches. They both did very well. The one receiving douches was under treatment a week longer. There has been no recurrence in either of these cases.

Summary and Conclusions

A group of unselected cases of gonorrheal vulvovaginitis was treated with Corbus-Ferry Gonococcus Filtrate in the Outpatient Clinic of the Children's Hospital. Good results with cure were obtained in 47 per cent of the cases. This treatment was unsuccessful in 53 per cent of the cases. No unusual complications were encountered.

Corbus-Ferry Gonococcus Filtrate should not be used to the exclusion of other therapy in the treatment of gonorrheal vulvovaginitis.

N. B.—From the service of Dr. E. W. Titus.

BIBLIOGRAPHY

1. Clark, L. T., Ferry, N. S., and Steele, A. H.: Studies of the Properties of Bouillon Filtrate of the Gonococcus. J. Immunol., 1931, 21, 233.

Discussion

Dr. Bernard Notes: When Corbus-Ferry filtrate first came out, a great deal of it was used and it was pushed very strenuously by the pharmaceutical-house salesmen. These claims made for new preparations have to be checked, and that is the main accomplishment of Dr. Kushner's paper. Theelin will cure vulvovaginitis, but almost anything will cure vulvovaginitis. In fact, Brunet, in a very comprehensive article, has pointed out that a certain proportion of these cases will cure themselves in 4 months if left alone. Cervicovaginitis, however, is another problem, and in children above the age of approximately 6 years the cervix usually has to be cauterized.

Dr. David H. Kushner: Antiseptics are of no value in the treatment of gonorrheal vulvovaginitis. We had one case that had been receiving injections of mercurochrome, coming to a urologist's office 3 times a day for the first week, twice a day for the second week, once a day for the third week. That was the most difficult case to cure.

In cauterizing the cervix in children we usually use an anesthetic, although in older girls with proper coöperation even that is not necessary. The child is draped in the usual lithotomy position, with partial sterile precautions. A small speculum is used to visualize the cervix, and an ordinary nasal electrocautery tip. The amount of electricity needed to bring the cautery tip to the proper heat is determined beforehand, and the cautery is inserted before the switch is turned on.

The routine treatment employed in the clinic by Dr. Notes and me in cases of vulvovaginitis begins with the usual precautions as regards the infection to other children and the infection of the eyes. Then the mother is told to give the child douches and instructed how to give them. If necessary, a visiting nurse is sent out to give the douches. A teaspoonful of ordinary bicarbonate of soda is added to a quart of warm water. Douches are given twice daily, and the children are brought back to the clinic once a week. When we feel that the acute infection has subsided a 25 per cent silver nitrate solution is used, which is aimed at the cervix but may contact the vaginal mucosa. This is done to elicit a reaction, not for any antiseptic value. When 6 consecutive negative smears have been obtained after the use of silver nitrate at least 3 or 4 times, the patient is given a month's rest, but the douches are continued. When the patient returns, another smear is obtained and silver nitrate reapplied. If the smear is negative the following week, 3 months' rest is given, the douches being continued once daily. The children are kept out of school until 6 consecutive negative smears have been obtained.

THE FACTS AND FALLACIES OF HEARING TESTS*

Walter A. Wells, M.D.

Washington

Hearing tests are done for two distinct purposes: (1) to simply measure the acuity of the hearing, and (2) to diagnose the cause or location of auditory disease. Both are important objectives because loss of an appreciable degree of hearing is of serious concern to every individual, and a severe loss is likely to have profound bearing upon his social and economic life. Acuity-hearing tests are therefore valuable to discover an early loss of this function, and diagnostic tests are essential to determine the cause and location of the trouble in order that helpful and timely treatment may be instituted. Unfortunately, however, hearing tests for both these purposes are greatly neglected, and they are only exceptionally undertaken with the care, precision and scientific accuracy which their importance demands.

Improper Testing

By way of introduction, let me sketch a picture, which I believe is not an unusual one in actual life. The scene is a doctor's office in a large city. The time is midsummer. It is a warm day, and the window is slightly open to allow a little cool air for our doctor and his patient. At the far end of the room, his back against the wall and his elbow resting upon a table by his side, sits the patient, who has come to have his hearing tested. The doctor, having placed a pledget of cotton in one ear of the patient, stands facing him, and repeats in a conversational voice and then in a whisper a series of numbers to test the ear which is not excluded. If the patient hears each number spoken the doctor steps backward by degrees until the words are no longer, or are just barely heard. He then changes the cotton to the other ear and repeats the test and then notes the distance in feet, which he sets down as his record of the voice test for each ear. What is wrong with this picture? First, in the average doctor's office in a large city, even with windows closed, there is an average noise of about 25 decibels, which cuts down normal hearing about 15 per cent and makes it impossible to discover slight hearing impairment; with the windows partly open on this warm midsummer day, as in our picture, the decibel rate is raised to 40 or 50, so that with the rise and fall with passing traffic there will be such interference and such fluctuation that the tests are worthless. Let us suppose then that the doctor despite the discomfort closes the window and proceeds with the examination. The noise will be reduced but is still too much for accurate tests. Second, the room is by much too small. The ordinary conversation in a quiet room can be heard by a normal ear 60 feet, even the standard whisper, 20 feet. Therefore, for tests of this kind a room of extraordinary size is required. Third, spoken words, whether tonal or whispered, differ in intensity at different times and with different persons. For correct hearing tests a fixed standard of intensity is essential. One may make some approach in standardizing the whisper by only uttering test words after a complete expiration, using residual air. Fourth, the patient should not be leaning against the wall, nor have his arm on the table, for vibrations are thus conducted, interfering with the delicacy of the tests. Fifth, there is an error in assuming that cotton in one ear excludes that ear for ordinary conversational voice or whisper in an office room of average size. Most watches are clearly heard through cotton at a number of inches from the ear, varying with the loudness of the watch, but less if cotton is previously moistened and the tragus pushed firmly inward. One of the simplest tests for simulation of unilateral deafness is to stuff the good ear with cotton and approach the alleged deaf one with a loud-ticking watch. The malingering patient refuses to hear it, when as a matter of fact he should hear right through the cotton of the good ear. Sixth, the doctor is facing the patient in making his test. This is a glaring fault, for a good lip reader will easily catch every word without hearing, and even one with no training in the art is apt unconsciously to be helped by watching the movements of the lips and the facial expression. Seventh, the physician, when his words are well heard, gradually increases the distance. The fault in this is that the sound lingers in the memory, and the patient imagines he still hears what he actually does not. This is particularly true of watches and similar sounds. It is better, after having given the patient a sample of what he must listen for, to approach from no hearing to hearing. Eighth, the use of a series of numbers, first outspoken and then whispered, is open to the criticism that different numbers are easily guessed when so repeated and the subject knows that they are being used. Ninth, words differ in frequency quality as well as in intensity, and this fact makes the test unequal. Sibilant-sounding numbers, as "6" and "7" have a much higher pitch than that predominant in such numbers as "4" or "40." Incidentally great care must be used to avoid accentuating certain words. A clever subject can guess much from the accent of words and the context of a sentence. No matter under what condition and with what precaution hearing tests are made, there is one source of error which is common to them all and difficult to avoid, and yet which examiners take too little into account. I refer to the human element. Hearing is a subjective sensation which cannot be objectively measured, and consequently in the final analysis one is absolutely dependent upon the responses of the subject. Any physician of experience knows how undependable and often misleading patients may be in the interpretation of their own sensations.

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* Read before the Section on Ophthalmology and Otolaryngology of the Society, November 19, 1937.

Our hearing tests are based on minimal or threshold sensation which it is no easy task for even the most intelligent and alert to sometimes distinguish. When one is dealing with a stupid, lazy or inattentive person, the answer will often be very wide of the mark.

In all hearing tests due allowance must be made for fatigue phenomena, which are quite pronounced in some cases. A sound too long continued completely fades from hearing, due to fatigue of the nerve. A proof that fatigue causes this fading is that if the sound stimulant after failing is removed for a few seconds and then brought back to ear, the sensation returns. The psychologic fact of memory images has already been mentioned.

Otologists are particularly interested in the application of hearing tests for diagnostic purposes. To locate the seat of the trouble, special tests variously modified have been devised. They are all based on certain fundamentals, which are (a) that in conductive deafness the low notes are especially involved and there is apparently prolonged bone conduction, and (b) that in the case of inner-ear deafness high notes are found to be especially affected and there is shortened bone conduction. But even these fundamentals have been recently challenged. Our lifelong belief that bone conduction is prolonged in conductive deafness is a fallacy, due to the fact that these tests have hitherto all been made in a somewhat noisy environment. A conductive lesion serves to exclude the outside noise, and the intact inner ear thus protected gets the full benefit of the bone-conducted sound. Therefore, there is an apparent prolongation as compared to normal, because the normal ears are subject to the masking effect of the outside noise. Knudsen and Jones of Los Angeles made careful studies of a great number of these middle-ear cases with supposed prolonged bone conduction and discovered that when the tests were made in sound-proof rooms the prolongation did not exist.

Our conclusion from these studies must be that in the use of the old bone-conduction tests for the discovery of middle-ear disease, we must adhere to the old method of using them in a noisy environment.

One of the other fundamentals in qualitative tests has recently also been challenged, at least in its practical implication. Harvey Fletcher, referring to the tests of high and low notes for the differentiation of middle- and internal-ear disease, warns that too much confidence should not be placed in our results, because of the wide variation that may normally occur in the two extremes of the scale. However, exceptional findings must not be allowed to stand in the way of a good general rule.

Errors in Tuning-fork Tests

Let us now briefly consider the three well-known tuning-fork tests—the Weber, the Rinne and the Schwabach.

In the use of the tuning fork many errors may creep in: (1) It has long been realized that there is a serious defect in all tuning-fork tests because of the difficulty in standardizing the initial blow. A spring hammer fixed to one prong may be used. Letting the fork fall of its own might was suggested by Randall. These devices, however, serve only as a crude approach to assuring a definite intensity. (2) Tuning forks have overtones, which interfere much with the result, especially if struck too hard a blow. It is best to strike gently and at the junction of the middle and outer third—the acoustic center. (3) Different results will be obtained according to the manner and degree of pressure of the stem against the skull. Anyone can easily prove for himself how much he can at will lessen or increase sound, using now light, now firm pressure of the stem. Furthermore, the stem must contact the scalp and not a thick cushion of hair. (4) The manner of grasping the fork is also important. One must avoid a tight grasp to prevent damping vibrations. (5) In tuning-fork tests the fatigue phenomena is especially prone to occur. It is best avoided by alternate periods of rest and stimulation.

The Weber test is made by placing the stem of a vibrating tuning fork on the midline of the skull. In case of deafness of one ear it will be lateralized to the deaf ear if the trouble is in the middle ear, but to the good ear if the trouble is in the labyrinth. In a simple uncomplicated unilateral deafness this may hold, but if, as often happens, there is trouble in both ears or it is of mixed type the result is undependable or even misleading. The regular reaction, moreover, may in any case be altered by asymmetry of the skull or abnormal resonance, producing results contrary to expectations. McKenzie has called attention to the frequent absence of a lateralization to the affected side in mastoiditis, even when apparently prolonged on that side, the so-called "Weber-Schwabach paradox."

The Rinne test is used for the purpose of comparing bone and air conduction in the same ear. It is generally made by holding the stem of the vibrating fork against the mastoid until the sound is no longer heard, and then quickly changing and holding the prongs close to the meatus. As a basis of comparison it is stated that for the normal ear air conduction is about twice as long as bone conduction. But this will vary with difference in the pitch of the fork, with the distance of the prongs from meatus, and with the degree of pressure of the stem against the bone. It will also differ according to whether one first tests air or bone, because if bone is first tested damping comes into play. In deafness of the conductive type, bone conduction is relatively lengthened; so much so that in severe conductive deafness the relation is reversed, and it is of longer duration than by air (Rinne negative). But there is danger in a too sweeping generalization. Every negative Rinne test does not justify a conclusion of conductive or middle-ear deafness. One often gets a negative Rinne test in severe nerve deafness, both air and bone conduction being shortened, th eair more so than the bone. In a case of complete nerve deafness one may get a false Rinne test—no hearing at all by air but some by bone, the sound being transmitted from the opposite side.

The Schwabach test aims to determine the actual duration of bone conduction and to compare it with the normal. I have already referred to the fallacies incident to this procedure due to differences in the noise of the room, in the distance from the ear, in the pressure against the bone, in the manner of holding the stem, in the fatigue phenomena, etc. At best it seems to me to be an uncertain as well as a tedious procedure. I believe that the simplified procedure of comparing the patient's bone conduction with that of the examiner previously determined gives as satisfactory information as counting the seconds, and it takes much less time. My objection to using the Schwabach procedure with forks of different pitch in order to get a curve is that the forks of a pitch above 2048 are not suitable for bone-conduction tests, and it is only forks higher than this that give the information needed in regard to the upper end of the scale.

THE AUDIOMETER

The audiometer is somewhat costly and is not perfect, but it is, even so, so far superior to the older methods that no one who wishes to do scientific work can afford to be without it, at least for testing hearing acuity. It is a scientific instrument because it measures with mathematical exactness the energies that are in known relation with the sensation of hearing and thus gives a much-needed standard of determined intensities. It has at the same time the advantage of enabling one to make a graphic record, important for comparison with future tests or with other observers. It makes no great difference that audiometers of different types are on the market and that charts of different types are used. The sensation unit used in some types corresponds practically with the decibel used in others, and the decibel has become the accepted scientific standard of sound intensities. In some types of audiometers the hearing is charted in percentage values, because it is more readily grasped by the average person. Another advantage of the audiometer over the old method of tests by voice, watch, etc., lies in the use of the ear piece, which enables the patient to listen with either ear separately without interference of the other side. I am speaking of the value of the audiometer for testing hearing acuity. Its value for diagnostic purpose, although claimed by some, is still a debatable question. It is proper too that mention be made of certain fallacies into which one may be led if he is not on guard in the use of this instrument. The use of the ear phone does not insure absolutely pure air-conduction hearing. There is always a certain percentage of osteotympanic conduction in every such test.

Observers have noted that in case of complete unilateral deafness they may get a curve which exactly parallels that of the good ear, at a depth 30 or 40 decibels below it. This is spoken of as a shadow curve, being a reflection of the hearing from the good side. It can be abolished by proper masking of the ear not being examined. Masking is always in order if perfectly dependable results are to be had in the separate testing of the two ears. This is particularly true in testing by bone conduction. The Schwabach test, therefore, which purports to give bone-conduction values, cannot be relied upon for the bad ear if the other ear is normal or nearly so, unless the masking procedure is employed. Finally mention must again be made to emphasize the fallacy of testing hearing acuity in a noisy environment. One cannot under such conditions pick up beginning or slight loss of hearing. It is comparable to testing eyes in a room so dark that neither the doctor nor the patient can see the small-type lines, but is worse because street noises fluctuate.

It was mentioned at the outset that hearing tests were for two purposes, one to ascertain the degree of loss, the other to ascertain the cause of the trouble. For the reasons stated, I think it must now be seen that for the first purpose the electric audiometer and the sound-proof room are indispensable if one wants to have accurate data. As regards the second purpose authorities differ about the value of the audiometric curve alone. Personally I do not feel that we have yet reached the point of complete dependence upon the curve. I believe that the tuning fork with all its imperfections still has a place in the diagnostic proceeding. Used with due regard to liable fallacies, it can give valuable information as to bone conduction. Nevertheless, since accurate knowledge of hearing acuity is a preliminary requirement in a diagnostic examination, the audiometer as well as the sound-proof room are in this connection indispensable.

With regard to the upper end of the scale, if the audiometer goes high enough and is properly calibrated one will have the best of all means available for testing in this important area. Going high enough means going at least to 4096 but still higher frequencies should be tested. Audiometers that go the very highest end of the scale are very expensive and generally only to be found in the physical laboratories. The magnesium forks, as made by the Riverside laboratory, can now be obtained as high as 20,000, the normal human limit. If properly used these will prove very satisfactory for practical purposes in ascertaining upper-tone sensitivity.

From what has been said it is evident that hearing tests as generally done are full of fallacies; but fortunately we have still left some fundamental facts. If we only keep well in mind these fundamental facts, and at the same time take due precaution to avoid the fallacies, we may gather a fund of information very helpful in the exploration of an exceedingly important function.

ABSTRACT OF PAPER READ BEFORE THE SOCIETY

"Cerebellar Agenesis with Anatomical Study of an Extreme Case,"* **H. S. Rubinstein, M.D.**, Baltimore, and **Walter Freeman, M.D.**, Professor of Neurosurgery, George Washington University School of Medicine.

Cerebellar agenesis which may be complete or incomplete is usually accompanied by antemortal signs and symptoms of cerebellar defect. A case is reported in which in spite of extreme attenuation in cerebellar development antemortal signs did not develop until 2 years before the patient's death at 71 years of age. The brain when removed was found to show numerous atheromatous infarcts on the cortex cerebri, particularly well marked over the parietal lobes. The pons was small and the cerebellum was limited merely to a rather diminutive flocculo-nodular lobe. Detailed studies of the brain disclosed in addition to marked hypoplasia of the cerebellum and its related structures, such as the fastigial, dentate, inferior olivary nuclei and pons, a right-sided defectiveness in the olfactory, visual reflex, and mesencephalic trigeminal systems. A consideration of the question of compensation for cerebellar deficiencies allows the conclusion that the patient was afflicted with a constitutional inferiority which was so generalized that for the greater part of his life he could function as a fairly well-balanced psychobiologic entity on a lower psychosomatic, social, economic and intellectual level.

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* Presented before the Section on Neurology and Psychiatry of the Society, November 4, 1937.

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MEDICAL PROGRESS IN 1937

The year 1937 has witnessed some outstanding advances in the war against disease. Of greatest value, probably, has been the discovery of sulfanilamide as a bacteriostatic agent. Important articles on the use of this chemical agent have appeared in many medical journals, including the Medical Annals of the District of Columbia. As with all new remedies, experience must be accumulated to determine the true worth, method of administration, indications, contraindications and dangers of this drug. Sufficient evidence is at hand to allow the statement that sulfanilamide is very potent against that deadly enemy of mankind, the hemolytic streptococcus, and its near relatives. Other organisms definitely crippled by it are the important cocci—the pneumococcus, the gonococcus, and the meningococcus. Although unpleasant reactions attend its use, serious ill-effects have rarely been observed. The drug must be used in sufficient amount to produce a certain concentration in the blood. With adults this amount is close to 80 grains (5.2 grams) daily. The oral route is best, but if the patient is unable to swallow a solution of the crystals (1 per cent aqueous) may be used subcutaneously; 100 cc. of this solution is equivalent to 20 grains (1.3 grams) of the drug taken orally. Prontosil may be used instead when the drug must be given parenterally, but this is probably not as efficacious as the solution of sulfanilamide crystals. Unpleasant reaction may be counteracted by the use of a similar amount of sodium bicarbonate when the drug is used orally. The Streptococcus viridans is one of the important organisms apparently unharmed by the drug.

The battle against pneumonia still wages, but the enemy is gradually being worn down. An important development is the use of rabbits in the preparation of the antiserum. The antibodies can be concentrated to a greater degree in the animal's serum and thus reactions be minimized. Also, this form seems definitely more effective than the form derived from immunizing horses. There are now 32 recognized types of pathogenic pneumococci, and each year the number of types susceptible of serum treatment is increasing. Antisera are now available and of definite value against types 1, 2, 3, 5, 7, 8 and 14.

During 1937 experience has accumulated in regard to the use of protamine zinc insulin, that slow-acting form developed by Hagedorn. Whereas a dose of unmodified insulin acts over a period of 6 to 8 hours, the new form acts for 24 to 36 hours. There are both advantages and disadvantages to this new preparation. By acting continuously it serves to prevent the high peaks of the blood-sugar level that occur in severe cases of diabetes and it reduces the number of injections necessary in 24 hours. However, because of its continuous action severe reactions develop insidiously, and while not especially dangerous they are not so easily combatted as those of regular insulin. Therefore, it is advisable in many cases to increase the number of feedings each day to 5 or 6 in order to obviate interprandial hypoglycemia. Often, without these reactions it is difficult, if not impossible, to render the urine sugar-free throughout each 24 hours. Therefore, although one injection of this form of insulin on arising in the morning is all that is necessary, supplementary injections of a small dose of unmodified insulin may be required before breakfast and sometimes before supper. It also usually takes a longer time to get the patient adjusted by the use of protamine zinc insulin than by the use of regular insulin. This new preparation should be used only by intelligent and careful patients who learn how to make proper adjustments of dosage from time to time and to recognize and treat reactions. It must never be forgotten that no form of insulin should be used unless the diet is one of known food value and measured out daily. There is still no form of insulin that may be used orally, but recent researches indicate that such a preparation may soon be developed.

The hypoglycemic shock therapy of schizophrenia has been shown to be of considerable value, although not always of permanent benefit. The exact mechanism of the improvement is not known. The treatment consists in the giving of large doses of insulin and then after the production of severe shock to restore the blood-sugar level to normal by appropriate therapy. Success is naturally more apt to be attained in cases of short duration. There is of course some risk involved, but as experience grows this will become inconsequential. However, the disease is such a dreadful one that some risk is justifiable.

These advances in "medical science" are only a few that have been made recently. It is hoped that such medical progress will not be retarded by government restrictions that would dampen the ardor and reduce the time available to physicians to continue productive investigative work. It is not only the laboratory worker who makes progress; the practicing physician must evaluate his efforts and guide him toward a practical goal.

TRANSACTIONS OF THE SOCIETY

Stated Meeting, January 5, 1938

The following were duly elected to membership, upon recommendation of the Committee of Censors:

Active Members

Andrew Keene Bowie, 301 B Street, N. E.
Darrell Clayton Crain, Jr., 7611 Georgia Avenue, N. W.
Jules Daniel Damian, 2700 Que Street, N. W.
William Shambough Detwiler, 1016 Sixteenth Street, N. W.
Michael Patrick DeVito, 1532 Sixteenth Street, N. W.
Francis William Dunne, 628 Massachusetts Avenue, N. E.
Otto Anderson Engh, 4906 Wisconsin Avenue, N. W.
Andrew Browne Evans, 1029 Vermont Avenue, N. W.
Irvin Feldman, 900 Seventeenth Street, N. W.
Nathan Glaubach 219 N Street, S. W.
Milton Morton Greenberg, 2440 Sixteenth Street, N. W.
Robert Barron Havell, 5516 Nebraska Avenue, N. W.
Eugene Witter Higgins, 4812 Ellicott Street, N. W.
William Hollister, 1801 Eye Street, N. W.
William Dabney Jarman, 1621 Connecticut Avenue, N. W.
Edward Burke Kelly, 1726 Eye Street, N. W.
Richard Joseph Kemp, 1746 K Street, N. W.
Elmer Klein, 1464 Columbia Road, N. W.
Sander Edwin Lachman, 1801 Eye Street, N. W.
Zigmond Meyer Lebensohn, Saint Elizabeths Hospital
Alexander Camillo Leonardo, 5801 Thirteenth Street, N. W.
Thomas Francis Lowe, 2322 Nineteenth Street, N. W.
John William Mann, 1205 Farragut Street, N. W.
Agnes Louise McNutt, 1015 Sixteenth Street, N. W.
Kemp Hammond Mish, 1726 Eye Street, N. W.
Arthur Nachlas, 900 Seventeenth Street, N.W.
John Manly Orem, 1026 Fifteenth Street, N. W.
Harry Byron Orleans, 5014 Georgia Avenue, N. W.
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William Gilmer Puryear, 5005 Illinois Avenue, N. W.
William Raffel, 2038 Eighteenth Street, N. W.
Evelyn B. Reichenbach, Saint Elizabeths Hospital
Isadore Rodis, 1801 Eye Street, N. W.
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Richard Thornburgh Sullivan, 900 Seventeenth Street, N. W.
John Alden Swartwout, 12 Logan Circle, N. W.
George Tolstoi, 501 C Street, N. E.
Thomas Frasier Williams, 1801 Eye Street, N. W.

Associate Membership

Marian Minor Crane, 8357 Colesville Pike, Silver Spring, Md.
Ralph Manning Crowley, 1801 Eye Street, N. W.
Ethel Collins Dunham, 1815 Forty-fifth Street, N. W.
Edna Gerrish Dyar, 7819 Eastern Avenue, Silver Spring, Md.
Charles Chris Hageage, 3310 Perry Street, Mount Rainier, Md.
Maurice Crowther Hall, (D.V.M.) National Institute of Health
Robert Carhart Hood, 5327 Reno Road, N. W.
Virginia Elizabeth Lane, 5512 North Carlin Springs Road, Arlington, Va.
Wesley Long Mays, 401 Twenty-third Street, N. W.
Howard Tilton Morse, 28 Carroll Avenue, Takoma Park, D. C.
Benjamin Wallace Viton, 401 Twenty-third Street, N. W.
Dorothy Vermilya Whipple, 2919 Forty-third Street, N. W.
William Robert Willard, 1650 Harvard Street, N. W.

Applicants for membership to be voted on in March, 1938:

For Active Membership

Stanley Harry Berenstein, University of Maryland—1934
John Emory Bowman, Georgetown University—1931
Irving Burka, University of Maryland—1936
Richard Bernard Castell, George Washington University—1935
Thomas Francis Collins, Georgetown University—1933
John Leonard Conley, Georgetown University—1929

Cyrus Robbins Creveling, George Washington University—1927
John Frank Dominick, George Washington University—1936
Karl Dortzbach, Long Island College of Medicine—1934
Maurice Russell Edmonston, Georgetown University—1932
Paul Jacob Ewerhardt, Washington University, St. Louis—1912
Frank Baum Clayton Geibel, Jefferson Medical College—1933
James Henry Gillen, Georgetown University—1932
Stewart Maxwell Grayson, George Washington University—1916
Raymond Leslie Gregory, University of Minnesota—1929
John Phelps Hand, Jr., George Washington University—1936
Lamar Blewett Harper, George Washington University—1936
John Francis Harrington, Georgetown University—1925
James Patrick Kane, Georgetown University—1933
Edward Aloysius Kelly, Georgetown University—1934
William Ellis Long, George Washington University—1929
George Henry Magee, University of Maryland—1907
Francis Nichols McDonald, Georgetown University—1931
James Edward Nolan, Georgetown University—1926
George William Reeves, George Washington University—1934
Richard Maurice Rosenberg, Georgetown University—1926
Gilbert Britt Rude, George Washington University—1934
William George Sorrell, George Washington University—1936
Paul Nealon Taylor, Georgetown University—1926
Francis Dycus Threadgill, Tulane University—1935
James Joseph Whisman, University of Cincinnati—1932
Edwin Eugene Ziegler, George Washington University—1928

For Associate Membership

James Irving Boyd, George Washington University—1926
Aaron Deitz, Jefferson Medical College—1932
Jesse Lee Hall, Vanderbilt University—1916
Winfred Overholser, Boston University—1916
William Suit Ritchie, George Washington University—1926
Norman Clifford Shoemaker, University of Nebraska—1933
A. Elizabeth Verder (Ph.D.), University of Chicago—1928

Dropped, pursuant to provisions of Chapter IV, Article V, of the Constitution:

Active Members	*Associate Members*
Leslie T. Gager	Nancy D. Campbell
Owen S. Parrett	Charles L. Smith

Four New Life Members

Chapter II, Article IV, of the Constitution of the Society, reads as follows:

> Life members shall be active members who have been active members for a total of forty years. They shall have all of the privileges of active membership and shall be exempt from paying dues and assessments.

Our honor roll now numbers 52. The congratulations of the Society are extended to:

Seniority Number	Date of Membership
214 Frank Wheeler Braden	April 13, 1897
218 James Richard Tubman	April 27, 1897
224 William Sawyer Newell	October 15, 1897
225 Edwin Bernhard Behrend	October 18, 1897

who have for forty years been on the roster, meeting all dues and assessments and lending their support to organized medicine by frequent attendance. Their status is now elevated to Life Membership.

Amendments to the Constitution Adopted

1. Eliminates Nominating Committee.

(a) Amend Chapter VI, Article I, by adding after the word "ballot," the following:

> "and a majority of the votes cast shall be necessary to elect. In case no nominee receives a majority of the votes on the first ballot, the nominee receiving the lowest number of votes shall be dropped and a new ballot taken. This procedure shall be continued until one of the nominees receives a majority of the votes cast, when he shall be declared elected."

Article I, of Chapter VI, would then read:

> "Elections shall be by ballot, and a majority of the votes cast shall be necessary to elect. In case no nominee receives a majority of the votes on the first ballot, the nominee receiving the lowest number of votes shall be dropped and a new ballot taken. This procedure shall be continued until one of the nominees receives a majority of the votes cast, when he shall be declared elected."

(b) Rescind Article II of Chapter VI (pertaining to the Nominating Committee) and substitute therefor the following:

> "Nominations for office shall be made orally at the first meeting in March. The election of officers shall be held at the annual meeting."

2. Provides for President-elect.

(a) Chapter V, Article I, Section 1. Insert "a President-elect who shall assume office the following year" after the word "President" in line 2. Section 1 would then read:

> "The officers of this Society shall be a President, a President-elect who shall assume office the following year, a First and a Second Vice President, a Secretary-Treasurer, a Delegate and an Alternate to the House of Delegates of the American Medical Association."

(b) Chapter VII, Article II, Section 1 (Executive Committee personnel). In the first line, after "President" insert "the President-elect."

3. New Sections.

Amend Chapter VIII (Sections), Article II, by adding:

(a) "Section 6, on Gastro-enterology."
(b) "Section 7, on Pediatrics."

Group Hospitalization, Inc.

Representatives

The following were duly nominated by the President, Dr. Thomas E. Neill, and elected by the Society:

W. M. Ballinger, Chairman
Joseph B. Bogan
Caryl Burbank
Tomas Cajigas
William W. Chase
Arthur C. Christie
William T. Gill, Jr.
R. Arthur Hooe
LeRoy W. Hyde
Richard A. Kearny
Leon A. Martel
H. J. Russell McNitt
Howard P. Parker
Philip O. Pelland
Alec A. Preece
F. A. Reuter
E. Kirby Smith
J. Russell Verbrycke, Jr.

ACTIVITIES OF SECTIONS

Section on Pediatrics

A preliminary organization meeting was held on October 14, 1937, which was attended by about 35 active members of the Society interested in the practice of pediatrics. The following temporary officers were elected:

Joseph S. Wall, Chairman
Harry H. Donnally, Vice Chairman
Harry A. Spigel, Secretary-Treasurer

The Chairman, in addressing the meeting, outlined the following as functions of the Section on Pediatrics:

1. Presentation of scientific papers.
2. The furthering of pediatric activities and standards in Washington.
3. To establish contacts with the American Academy of Pediatrics, a National organization.
4. To coöperate with the Health Department, especially in matters relating to child welfare and communicable diseases of children.
5. To make contacts and develop understanding with the Parent-Teacher Associations, and other similar organizations.

Plans were later made for the Section to furnish the program for the Society on January 19.

Among those in attendance at the organization meeting were noted:

Drs. William S. Anderson, Robert A. Bier, Elizabeth E. Chickering, Coursen B. Conklin, Edgar P. Copeland, Hugh J. Davis, H. H. Donnally, Harry F. Dowling, Herman Eisenberg, Mabel H. Grosvenor, Benjamin P. Lafsky, Frank Leech, Edward Lewis, J. H. McLeod, Charles A. Millwater, Margaret M. Nicholson, Aaron Nimetz, William F. O'Donnell, Harry A. Ong, Arch L. Riddick, M. Scandiffio, Charles A. Schutz, Harry A. Spigel, Joseph S. Wall.

TRANSACTIONS OF THE WASHINGTON SOCIETY OF PATHOLOGISTS

The meeting of the Washington Society of Pathologists was called to order at 1:30 P.M., Saturday, December 4, 1937, in the Army Medical Museum by the President, Dr. Oscar B. Hunter. There were 18 members present.

Presentation of Cases

Dr. Robert J. Jermstad presented the case of a 48-year-old colored man who was admitted to the hospital, September 24, 1936, complaining of ulcers on the lower portion of both legs which refused to heal. These had been present intermittently for the past 10 or more years. He had had varicose veins for the past 20 years. About 1 month prior to admission his legs began to swell. This swelling gradually progressed upwards to involve the thighs, genitals and finally the lower abdomen. He also noted tender nodules in both inguinal regions and slight dyspnea on exertion. Examination revealed an enlargement of the cervical, supraclavicular, and axillary lymph nodes. The inguinal nodes were the size of large pecans. The lungs were essentially negative. The heart showed some enlargement to the left. B.P. 140/90. The laboratory data were as follows: Kahn test negative; hemoglobin 75 per cent; R.B.C. 4,900,000; W.B.C. 7,500; 65 per cent poly's; 3 per cent bands; 28 per cent lymphocytes; 4 per cent monocytes. X-ray examination of the chest revealed no definite mediastinal masses. Two months after admission the adenopathy became more pronounced, and X-ray treatment was instituted, following which the nodes seemed to decrease in size. This was not permanent and they continued to grow larger. Eleven months after admission the nodes, especially in the inguinal regions, had doubled in size and the patient at this time developed signs of fluid in the left chest from which 1500 cc. of cloudy fluid was removed by aspiration; this procedure was repeated on the average of every 2 weeks, similar amounts being withdrawn until the patient's death on November 4, 1937. About 1 week before death his blood N.P.N. was 140, urea nitrogen 128, uric acid 4.8, creatinine 6.4. The temperature during his stay in the hospital was mostly 98.4°F., with an occasional rise to 99°F.

At autopsy large bilateral tumor masses were found in the inguinal regions measuring 6 cm. in diameter. These were incorporated in a sheet of neoplastic tissue which extended from the floor of the pelvis into the abdomen in a retroperitoneal location along the spinal column up into the thorax as high as the bifurcation of the trachea. This sheet of neoplastic tissue, which varied in thickness from 1 to 3 cm., surrounded the aorta, ureters, part of the kidneys, part of the large intestines, and the adrenals, and had definitely invaded the pancreas. In the thorax it surrounded the aorta and esophagus. The appendix was also infiltrated, as were the mesenteric lymph nodes, which showed enlargement up to 3 cm. in diameter. On section, these masses were very dense and yellowish-white. The ureters had been almost completely occluded by compression of the neoplasm, and both kidneys showed a marked hydronephrosis.

Microscopic examination of various portions of the neoplasm revealed a dense cellular structure with occasional areas of necrosis. In the lymph nodes there was complete disappearance of the follicles with replacement of the normal lymphoid structures by a mass of pleomorphic cells which stained very heavily. There were no definite mitotic figures or eosinophils, and only occasional sections revealed suggestive Dorothy Reed cells. Special stains revealed a marked increase in reticulum which with the above picture of pleomorphism was diagnostic of a diffuse infiltrating Hodgkin's disease.

In the discussion it was felt that the case was one of lymphosarcoma or a Hodgkin's disease. In view of the rather large amount of necrosis that was present and the more or less failure of the capsule of many of these lymph nodes to be infiltrated, the lack of mitoses which one expects to find in a lymphosarcoma, and also the marked increase in the reticulum, as shown in the reticulum stain, Hodgkin's disease seemed the most likely diagnosis.

Drs. Oscar B. Hunter and George Tolstoi presented the case of a 63-year-old white man whose occupation was that of locomotive engineer. He had noticed a mass in the umbilical region about 5 weeks prior to its surgical removal. This mass had increased in size but was not painful. The intern described it as a small ulcerated lesion on the umbilicus, firmly attached; there were no palpable inguinal glands.

In the discussion it was stated that no primary focus was found in this patient; the tumor was considered an adenocarcinoma, either secondary to, or arising from embryonic rest.

Dr. Roger M. Choisser presented the case of a white man, aged 26 years, well developed and well nourished, who weighed about 190 pounds. For 4 months he had noticed weakness which had become progressively worse. About 2 months later he had developed what was diagnosed influenza. After 4 or 5 days in bed he had attempted to return to work. The heart rate at this time showed a moderate increase. Physical examination revealed a moderate generalized lymphadenopathy with enlargement of the heart and liver. The B.P. was 110/70 and later fell to 100/60. At autopsy the pericardium was found to be enormously enlarged and fused to the heart by a densely adherent hemorrhagic envelope. This mass infiltrated the myocardium and projected into the right auricle, almost obliterating it. The mediastinal nodes were enlarged and on section were found to be composed of the same soft hemorrhagic neoplasm. Numerous small hemorrhagic nodules were scattered profusely over the thoracic and diaphragmatic pleura, and occasional small ones were in the periphery of each lung, in the omentum, peritoneum and liver, the largest in the liver measuring 2 cm. in diameter. The right pleural cavity contained 2,000 cc. of bloody fluid, and there were numerous infarct-like areas in the spleen and kidneys. This case was of particular interest because of its fulminating clinical course, which was interpreted as an infection, and because of the absence of skin lesions. The diagnosis was Kaposi's hemorrhagic sarcoma.

In the discussion the unusual feature of no skin involvement was noted. The peculiar granulation-tissue appearance of the entity was emphasized. There was a question as to whether this was neoplastic or inflammatory in origin. Dr. Ewing thinks it is inflammatory. Blood studies showed nothing of interest except pronounced anemia and a weakly positive Wassermann (1 plus). The clinical manifestations were primarily cardiac.

Dr. H. H. Leffler presented the case of a 45-year-old woman whose chief complaint was abdominal enlargement of 3 weeks' duration, and pain in the left side for the preceding 10 days. She had been perfectly well until 3 years before when she had developed pain in the mid-axillary line near the lower edge of the thoracic cage. The attacks of pain lasted 2 or 3 days and recurred about once a month for a year. About 2 years before admission the patient had swelling of the ankles and legs, and enlargement of the abdomen. The latter was tapped every 5 days at first, then every 2 weeks during her stay in the hospital. The patient continued to be tapped about every 2 weeks at Emergency Clinic for 7 months, when all abdominal swelling disappeared. In December, 1936, she developed shortness of breath which was exaggerated on exertion and which disappeared in a month. In January, 1937, swelling of the legs appeared again but subsided about May, 1937. At this time the patient also complained of abdominal swelling and was tapped until February, 1937. The fluid removed was like milk. The patient states that from 7 to 10 quarts had been removed at one time. About 3 weeks before admission her abdomen began to swell again and she went to Emergency Hospital. On examination there were found poor oral hygiene, bilateral enlargement of the lymph glands of the neck, which were firm, movable, and discrete; some dullness on percussion in the lower part of the right lung in the mid-axillary line; large, protruding abdomen, marked ascites, large, firm liver, several hard masses in the abdomen, marked lymphadenopathy in the cervical, axillary, epitrochlear, and popliteal areas. An X-ray film made on September 24, 1937, showed a nodule in the right mediastinum and 2 nodules in the left lower lung with a small amount of fluid at the right lung base. The diagnosis was Hodgkin's disease or lymphosarcoma obstructing the thoracic duct. A Thorotrast hepatosplenogram showed the liver fairly well and uniformly outlined. There was no evidence of carcinoma. The spleen was only faintly visualized and appeared to be normal. On October 9, 1937, the roentgenogram showed increased density at the left base which may have represented thickening of the pleura. Scattered throughout both lung fields were several variable-sized nodules. They probably represented metastatic malignancy. Both hilar shadows contained enlarged glands. A clinical diagnosis of Hodgkin's disease was made. A right axillary lymph node was removed.

In the discussion a nodular type of lymphocytoma and Hodgkin's disease were considered, and it was thought necessary to have a reticulum stain for final differentiation. Such a slide seen later was thought to favor reticulum-cell sarcoma.

Dr. R. D. Lillie presented some autopsy material from a white man, aged 60 years, who came into the Baltimore Marine Hospital complaining of jaundice of 5 days' duration and some nausea and vomiting and clay-colored stools from obstructive jaundice. He was found to have a positive blood Wassermann reaction. In view of the jaundice treatment arsphenamine was decided against. Icterus had been noted on a previous occasion. X-ray study showed some possible pathology in the pyloric region. He was operated upon, and a cirrhotic liver was found and a cholecystgastrostomy was done. He died 2 days later. The liver and the stomach together weighed 2,170 grams. The liver was deep greenish yellow. It was obviously cirrhotic with intrahepatic obstruction of the hypertrophic biliary type.

In the discussion the beauty of the stain showing biliary casts was commented upon.

Dr. George Tolstoi presented the case of a white man, 40 years of age, who had had ascites and hydrothorax over a period of about 6 months. The ovaries were removed and presented.

In the discussion this was considered to be a sclerosing carcinoma of the ovary, although the surgeon was sure it was a typical ovarian fibroma with hydrothorax and ascites. The origin from surface epithelium or from wolffian remnants were considered.

Dr. L. L. Ashburn presented the case of a tumor of a parathyroid gland of a white man, aged 38 years, with the following history: One year before the patient had been admitted to the hospital with multiple fractures, including the right and left femur, the right humerus and the right clavicle, from a fall down 4 steps. A tumor mass measuring 2.5 by 3.5 by 4.5 cm. was removed from behind the left lobe of the thyroid, which was suspected of being parathyroid. He had been suffering with pain in the legs, weakness, lassitude and loss of appetite and weight. The question at that time was whether the tumor was malignant or not. Laboratory data at that time were as follows: Hemoglobin 75 per cent; R.B.C. 2,210,000; W.B.C. 7,600; Kahn test negative; P.S.P. 20 per cent in 2 hours; Mosenthal, reduced function; blood calcium 14.7 and 16.0 Gm.; blood phosphorus 3.4 and 2.7 Gm., blood sugar 80 mg. Eight months after the removal of the tumor the patient noticed a small tumor behind the left ear, and at operation this was found to be beneath the sternocleidomastoid muscle. This again proved to be parathyroid tissue and showed microscopic invasion of blood vessels. The diagnosis was parathyroid adenoma, probably malignant.

The meeting adjourned at 3:30 P.M.

CALENDAR FOR COMING MEETINGS

Wednesday, February 2: Business Meeting. Reports of committees.

Wednesday, February 9: Program furnished by the *Section on Neurology and Psychiatry.*

1. "Clinical Use of Vitamin B1, and Absolute Alcohol Intraspinally; Some Experimental Observations." Elias Lincoln Stern, M.D., F.I.C.A.; Surgeon, Department Sympathetic Neural Surgery, Sydenham Hospital; Instructor in Anatomy, Columbia University Medical School, New York City.
2. "The Mental Hospital of Yesterday and Today." Winfred Overholser, M.D., Superintendent, Saint Elizabeths Hospital.

BUFFET SUPPER

Wednesday, February 16: Program furnished by the *Section on Internal Medicine.*

"Anemia—Etiology, Diagnosis, and Treatment." George R. Minot, M.D., Boston, Mass.

Wednesday, February 23:

1. "Routine Examination of the External Genitals." (Motion-pictures.) Frederick A. Reuter, M.D.
2. "Unsuspected Massive Pathology in the Upper Urinary Tract." Joseph F. Geisinger, M.D., Richmond, Va.

Annual Scientific Assembly, May 4–5, 1938. Dr. William W. Chase, General Chairman of the Committee on Arrangements, announces the following committee personnel:

David E. Buckingham, *Associates*
J. Lloyd Collins, *Attendance*
Clyde P. Reeves, *Banquet*
R. Lomax Wells, *Medical Clinics*
Benjamin F. Dean, Jr., *Surgical Clinics*
Richard W. Wilkinson, *Entertainment*
J. Ogle Warfield, Jr., *Finance*
John D. Wynkoop, *Halls and Exhibits*
Beveridge Miller, *Luncheon*
Leo B. Gaffney, *Printing*
Arnold McNitt, *Program*
William M. Ballinger, *Public Meeting*
Raymond W. Murray, *Publicity*
Coursen B. Conklin, *Registration, Technical Exhibits and Advertising*
Robert M. Bolton, *Woman's Auxiliary Liaison*
Elizabeth Parker, *Women Physicians*

BANQUET SCHEDULE

To inform those interested and to avoid unnecessary conflicts, it is deemed advisable to publish list of local annual medical society banquets, according to present information:

Thursday, February 10—Medical Arts Society
Saturday, February 19—George Washington University Medical Society
Tuesday, April 5—Women's Medical Society
Tuesday, April 19—Clinico-Pathological Society
Thursday, May 5—*Medical Society of the District of Columbia.* (CAREFULLY NOTE THIS DATE)
Thursday, May 19—Washington Medical and Surgical Society
Thursday, May 26—Medical Review Club
Saturday, May 28—Washington Gynecological Society
Thursday, October 20—Baltimore-Washington Dermatological Society

PUBLIC FACILITIES FOR PNEUMONIA DIAGNOSIS AND TREATMENT

Plans have been developed by the Health Department, District of Columbia, Bureau of Preventable Disease, under Dr. James G. Cumming, with the assistance of a committee from the Medical Society of the District of Columbia, of which Dr. Sterling Ruffin is Chairman, Drs. Matthew White Perry, Harry H. Donnally, Joseph S. Wall and Henry C. Macatee, members, for rendering aid in the diagnosis and treatment of lobar pneumonia. For uniformity and statistical purposes cases are to be typed by the Health Department Laboratory under the direction of Dr. John A. Noble, particularly when serum is to be furnished by the Health Department. Drs. T. J. Abernethy and Harry F. Dowling have been appointed specialists in pneumonia under Dr. Cumming.

The following prerequisites are emphasized:

1. Early recognition by the patient of the seriousness of his condition and his willingness to call the family doctor without delay.
2. Early clinical diagnosis by the doctor and the submitting by him of a specimen of sputum for laboratory diagnosis in order that the type of pneumonia from which the patient is suffering may be determined.
3. Having determined the particular type of pneumonia there should be no delay in starting the serum treatment.

Pneumonia now outranks tuberculosis as a cause of death. It was the second greatest cause of death in the District of Columbia in 1936. About 800 people die annually from this disease in Washington. The new program offers encouragement in the control of the disease.

NEWS AND PERSONALS

The Smith-Reed-Russell Society, an honor society of the George Washington University School of Medicine, had as guest speaker on January 11, 1938, Dr. Edwards A. Park, head of the Department of Pediatrics, Johns Hopkins University School of Medicine. Subject: "Various Types of Bone Diseases in Children."

Washington Medical and Surgical Society meets on January 24, 1938. The program:

1. "What Can the Doctor do About the Increasing Socialization of Medicine?" Arthur C. Christie, M.D., Fellow, the Washington Medical and Surgical Society.
2. "Recent Advances in Surgery of the Eye." E. Leonard Goodman, M.D.
3. Case Reports: Drs. Thomas C. Thompson and Edward M. Pickford.

American Medical Association San Francisco Meeting, will be held June 13–17, 1938. Members should write for hotel accommodations today if they contemplate attending. See recent issues of the Journal of the American Medical Association giving list of San Francisco hotels and rates. Send in your requests to Dr. Frederick A. Warnshuis, 450 Sutter Street, San Francisco, California, giving names of members of your party, type of accommodations desired, rates, date of arrival and departure.

Daniel Samuel Hatfield, M.D.

(1897-1937)

Dr. Daniel S. Hatfield, who was formerly in practice in Washington and who was some time Director of the Bureau of Communicable Diseases, Baltimore, Md., died August 5, 1937. He became an Active Member of the Medical Society of the District of Columbia on March 20, 1923; upon leaving the city he changed his status to that of Associate. While in the city he served as Medical Inspector, District of Columbia Public Schools. His degree in medicine was obtained from the University of Maryland, 1922. Dr. Hatfield held membership in the Phi Chi Medical Fraternity and up until his illness, which lasted over a period of years, he had been active in his professional work, notably public health activities. His funeral was held on August 7 at Logan, West Virginia. He is survived by his widow, Mrs. Gladys M. Hatfield; two daughters, his mother, two sisters and one brother.

Millard Fillmore Thompson, M.D.

(1857-1937)

Dr. Millard F. Thompson, a native of Washington and a life member of the Medical Society of the District of Columbia, who had for years been a family physician practicing in Washington, died on December 26, 1937. Preceding his graduating with the degree of M.D. in 1884 from Columbian (now George Washington) University, he was graduated in dentistry from the Baltimore College of Dental Surgery. He had the distinction of being the oldest living graduate of the latter institution and the third oldest member on the rolls of the Medical Society of the District of Columbia.

He served as Professor of Anatomy in the old National University Medical School. He had been through the years active in the affairs of the Presbyterian Church and the Masonic order. His brother was the late Dr. Henry Clay Thompson, who was Dean of the George Washington University School of Dentistry. On occasion he has presented scientific papers before the Society; the latest was "The Treatment of the Mammary Gland for and During Puerperium," on May 20, 1931.

Dr. Thompson is survived by his widow, Mrs. Virginia Knight Thompson; a son, Dr. Richard K. Thompson, Associate Member of this Society; a daughter, Mrs. Jack Thompson, Swarthmore, Penna., and four grandchildren. Funeral services were held December 28 at the Sixth Presbyterian Church with burial in Congressional Cemetery.

1938—MEDICAL SOCIETIES WITH LIMITED MEMBERSHIP—1938

WASHINGTON, D. C.

SOCIETY	PRESIDENT	SECRETARY	REGULAR MEETING
Academy of Medicine	Carl Voegtlin	E. C. Albritton	Quarterly
Aesculapian	Karl C. Corley	Wilbur W. Martin	1st Tuesday
Baltimore-Washington Dermatological	H. E. Kittredge	I. Lewis Sandler	3d Thursday
Clinical Club	H. N. Dorman	Harry S. Bernton	1st Tuesday
Clinico-Pathological	Lewis C. Ecker	H. L. Darner	1st and 3d Tuesdays
George Washington University	T. C. Thompson	Harry F. Dowling	3d Saturday
Georgetown Clinical	J. Bay Jacobs	J. V. Kennedy	3d Tuesday
Hippocrates-Galen	R. Massie Page	W. LeRoy Dunn	1st Thursday
International Medical Club	Tomas Cajigas	P. S. Constantinople	On Call
Jacobi	Harry A. Spigel	Isadore Levin	3d Monday
Kober	Howard L. Smith	W. M. Ballinger	3d Monday
Mackall	F. D. Costenbader	Perry W. Gard	3d Thursday
Medical Arts	W. Warren Sager	J. Ogle Warfield, Jr.	2d Thursday
Medical Review Club	John F. Preston	R. R. Rathbone	4th Friday
Osler	James N. Greear, Jr.	Walter Atkinson	3d Monday
Pan American (D. C. Branch)	F. Castillo-Najera	A. A. Moll	On Call
Virginia, Maryland and District of Columbia	James A. Gannon	A. Magruder MacDonald	Semiannually
Saint Elizabeths Hospital	A. M. Duval	Jay L. Hoffman	Annually
Washington Academy of Surgery	James A. Cahill, Jr.	F. C. Fishback	2d Friday, Bimonthly
Washington-Baltimore Psychoanalytic	Lewis B. Hill, Balto.	Amanda L. Stoughton, Balto.	2d Saturday
Washington Gynecological	Jerome F. Crowley	H. J. Russell McNitt	4th Saturday*
Washington Heart†	James W. Esler	B. W. Leonard	Quarterly
Washington Medical and Surgical	Joseph Horgan	Beveridge Miller	4th Monday
Washington Ophthalmological	G. Victor Simpson	F. D. Costenbader	1st Monday, Bimonthly
Washington Society of Pathologists	Oscar B. Hunter	Elbert DeCoursey	1st Saturday
Washington Urological	R. Arthur Hooe	Ivy A. Pelzman	Monday‡
Women's Medical	Anna Bartsch-Dunne	Elizabeth Parker	1st Tuesday

* October, November, January, March and May.

† Permanent office with lay secretary, Mrs. Wade Martin, 1315 Nineteenth Street, N.W.

‡ Every six weeks, September–May.

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THE PRESENT STATUS OF THE METRAZOL THERAPY OF SCHIZOPHRENIA*

A COLLECTED ABSTRACT

ZIGMOND M. LEBENSOHN, M.D.
Washington

Since 1934 the employment of metrazol-induced convulsions for the therapy of schizophrenia has attracted considerable attention from both the lay and medical world. Although the treatment is still in a highly experimental phase, the recent prevalent tendency to attack the problem of dementia praecox from the purely physiologico-chemical angle has given great impetus to the work. The comparatively widespread acceptance of the Sakel hypoglycemic-shock treatment of schizophrenia has perhaps marked a turning point in the general attitude toward therapy in schizophrenia, that is, from the "pure" psychogenetic approach back to the "pure" biochemical attack.

In view of the widespread interest exhibited in the therapy, and since the treatment is being employed in several nearby hospitals, it was thought worth while to collect all the available information on the subject for presentation to this Society. In addition to all the published literature, which is quite meager, I have been fortunate enough to receive personal communications and as yet unpublished data from investigators at the Illinois Research Hospital, Elgin State Hospital, Bellevue Psychiatric Hospital,[18] and the New York Psychiatric Institute.[3] I have had the opportunity of witnessing the treatment itself on a series of cases at Bellevue and the New York Psychiatric Institute in July and October of this year. Since November 7, I have been associated with this work as conducted at Saint Elizabeths Hospital.

HISTORICAL OUTLINE

Although some bitter controversy still exists between von Meduna, Sakel,[17] and their champions over the question of priority, it is generally conceded that von Meduna, working at the Royal Hungarian State Mental Hospital, was the first to use camphor convulsions as the sole agent in the treatment of schizophrenia on January 2, 1934.[10, 21]

Von Meduna's idea of treating schizophrenics by inducing epileptiform seizures is based primarily on the work of Nyirö and Jablonszky,[16] who, in 1921, published a paper on epilepsy in which they stated that in those epileptics who developed schizophrenia, the epileptic attacks gradually diminished in frequency and finally disappeared altogether. Of their 176 cases the so-called "pure" epileptics showed a recovery rate of 1.05 per cent, whereas those with schizophrenic symptoms showed a recovery rate of 16.05 per cent.

Approaching the problem from the other angle (that is, to determine the frequency of convulsions in schizophrenics), von Meduna quotes Steiner and Strauss who found only 20 cases of convulsions (of all types) in over 6,000 schizophrenics. He believes that a typical epileptic convulsion occurs so rarely in schizophrenia that when it does occur doubt must be cast on the diagnosis. Müller[14] was the first to report a few true convulsions spontaneously occurring in schizophrenics which were followed by remarkable remissions.

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* Read before the Section on Neurology and Psychiatry of the Society, November 4, 1937.

Von Meduna[12] searched for a drug which would produce convulsions without seriously injuring the organism. He eliminated strychnine, brucine, and thebaine because of their action on the spinal cord which resulted in tetanus-like contractions. He finally decided to use camphor-in-oil as being the most reliable convulsant drug. Before making any experiments on man, he injected a series of guinea-pigs with varying doses of a 25 per cent camphor-in-oil solution in November, 1933.[9] He observed all the types of epileptiform convulsions commonly occurring in man. Sections of the brain and spinal cord were taken at the height of the convulsion. Neuropathological examination revealed diffuse nerve-cell changes but no disturbances in the cerebrovascular system.

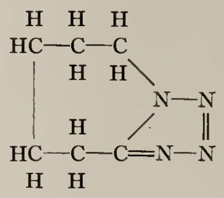
Fortified by this experience, he next produced epileptiform convulsions in a series of schizophrenics by giving intramuscular injections of the same 25 per cent solution of camphor-in-oil, using anywhere from 4 to 8 Gm. of camphor to produce a seizure. Although a number of patients responded favorably, he discarded camphor because of such disadvantages as abscesses, unreliability of reaction, and the large doses (40 to 50 Gm.) sometimes required to produce convulsions.

In a patient who developed no convulsive reactions to even large doses of camphor-in-oil, he used metrazol (cardiazol) intravenously, and secured an immediate epileptiform seizure. Since this time, he has used this drug exclusively, finding it more consistent in its action, more rapid in its results, and more free from injurious complications.

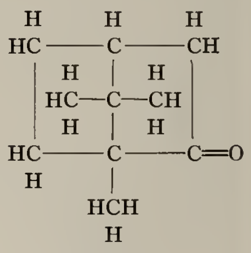
Von Meduna's first article on the convulsive therapy of schizophrenia appeared in the February 21, 1935, number of the *Zeitschrift für die gesamte Neurologie und Psychiatrie.*[10] In this article he promulgated his theory of the antagonism between schizophrenia and epilepsy, and presented a series of 26 cases, 10 of which showed complete remission following his treatment. The work was first introduced in this country by Dr. Emerick Friedman of Buffalo City Hospital, who, using a modification of von Meduna's technic reported on a series of 20 cases at the last meeting of the American Psychiatric Association, May, 1937.[4,5]

PROPERTIES AND PHARMACOLOGY OF METRAZOL

Metrazol (known as Cardiazol in Europe), is the proprietary name for a synthetic drug manufactured for the last 10 years by the Bilhuber-Knoll Corporation. Chemically, its name is pentamethylenetetrazol, a closed ring compound bearing no structural relationship to its fellow convulsant, camphor, which belongs to the terpene group.



Metrazol $(CH_2)_5CN_4$
(pentamethylenetetrazol)



Camphor
$(C_{10}H_{16}O)$

Metrazol is an odorless, faintly bitter, white crystalline powder which is very soluble in water and makes a neutral, thermo-stable solution. Absorption is very rapid (only 7 minutes by mouth), and because of the rapidity of excretion, is free from any cumulative effects.

Pharmacologically it belongs to that class of substances known as analeptics, which stimulate the vasomotor and respiratory centers when they are in a depressed state.[19] It causes a rise in blood pressure, increases the amplitude of the heart beat, diminishes the rate, and regulates the cardiac rhythm by acting directly on the medullary centers. In large doses it produces neuromuscular hyper-irritability and convulsions. Prior to its present use in the therapy of schizophrenia, it has been used as a stimulant in cardiovascular collapse, chronic circulatory weakness, auricular fibrillation, heart block, angina pectoris, and the pneumonias. It has been particularly useful as an antagonist to the depressive effects of large doses of avertin, chloral, the opiates, barbiturates, and general anesthetics. Anesthetists have found it very useful as a cardiac and respiratory stimulant in cases of shock and operating room emergencies.[20]

TECHNIC OF THE TREATMENT

Selection of Patients. As to the selection of patients, von Meduna has little to say. He worked exclusively on cases of schizophrenia and stated that the type was of little importance. At Bellevue Hospital, however, almost all the recoveries occurred in the paranoid form. Max Müller,[15] in a recent report, claims the treatment is particularly indicated for the stuporous type of catatonic. Low[8] and Wahlmann[21] have used it in several cases of manic-depressive psychoses with even better results than reported for schizophrenics. Subjective depression appears to be no contraindication.

From the purely practical standpoint it is highly important that the patients selected have good veins, since the success of the treatment depends on getting the drug into the blood stream as rapidly as possible. Difficulty in finding a vein, or getting out of a small vein during the process of injection will prevent the occurrence of convulsions and interfere seriously with the course of treatment. The sex of the patient is apparently not a determining factor, males and females being treated in equal numbers. Although no age limit has been set, it is considered unwise to attempt the treatment in patients over 45 years old. As in all types of therapy, the shorter the duration of the illness, the better the probability of cure (see Table 1).

In cases up to 6 months' duration, von Meduna claims an 80 to 90 per cent probability of remission. In the 6 to 12-month duration class, it dropped 45 per cent, and the probability percentage dropped rapidly until in cases of 4 years and longer, remission could no longer be expected.

Contraindications. The most important contraindications to the treatment are any pulmonary, cardiovascular, or renal disease, febrile conditions, and general debility. To avoid all danger, each patient is subjected to a thorough physical examination before treatment is begun, with particular emphasis on the heart and lungs. An electrocardiogram and X-ray studies of the chest are imperative laboratory procedures. Other tests, including urinalysis, blood Wassermann (which are routine in most hospitals in this country), blood sedimentation rate, blood urea, and blood sugar determinations are recommended by von Meduna. At Bellevue Hospital a minimum of laboratory work was done in order to make the mechanics of selection and preparation as simple as possible, in contrast to the rather elaborate work-up most of the insulin patients receive.

Preparation of Metrazol. Metrazol is supplied in 1 cc. and 3 cc. ampules of a 10 per cent solution ready for intravenous injection. Since, however, the average convulsant dose is about 5 cc., the preparation is best procured in the crystalline or powder form, a 10 per cent solution made up with distilled water, autoclaved, and placed in sterile, rubber-capped vaccine bottles of convenient size. Although Gillies[6] believes that the preparation is best made fresh daily, Harris,[3] at the Psychiatric Institute, feels that the solution is very stable and that if sterile precautions are exercised the solution will last indefinitely.

TABLE 1

VON MEDUNA'S RECOVERY STATISTICS, 1935

	TOTAL NUMBER	RECOVERED	UNIMPROVED
Total number of cases	110	54	56
Acute (1–6 months duration)	36	33	3
Subacute (6–12 months duration)	7	6	1
Chronic (over 12 months)	67	15	52

Preparation of the Patient. In preparing the patient it should be borne in mind that producing the convulsion is the most important thing in the treatment. To this end, all sedatives, particularly barbiturates, are withdrawn for at least 1 day prior to treatment. In some hospitals, the patients were given large doses of sodium bicarbonate on the theory that an alkalosis predisposes the organism to convulsions.[18] An enema is given the night before and sometimes on the morning of treatment in order to minimize fecal soiling during the convulsion. Coöperative patients are directed to void prior to receiving treatment. The patient is given nothing by mouth on the morning of treatment to avoid vomiting and aspiration of the vomitus. All rings and false teeth are removed from the patient before injection. The patient is usually weighed just before the injection, which takes place at about 8:30 to 9:00 o'clock A.M.

Treatment Room. The treatment is performed in a small room preferably out of sight of other patients in order to avoid any psychic trauma by their inadvertently viewing the convulsion. An ordinary hospital bed is used, the patient being clothed in a loosely fitting gown, and covered by a light blanket. The temperature of the room should be between 82°F. to 86°F. The room is not darkened as in the insulin treatment. At least one nurse or attendant should be at the bedside at all times.

Apparatus. All the apparatus required should be on a nearby table and consists of a 10 cc. syringe, a 19- or 20-gauge needle, the metrazol solution in a vaccine bottle, a rubber tourniquet, alcohol sponges, and a heavy, gauze-padded tongue depressor. Although I have never seen it used, ampules of coramine and a carbon dioxide-oxygen machine may be helpful in cases of emergency. It is convenient to use a stop-watch to time accurately the duration of the latent period and convulsions.

Initial Dosage. The initial dosage varies somewhat with the investigator. On the whole, the American workers have been somewhat more timid than the Hungarians. At the Psychiatric Institute the initial dose was 1 cc., with increasing doses in graduation of 0.5 cc. In most hospitals in this country, however, the initial dose is 3 cc., increasing 1 cc. each day until the convulsant dose is reached. Almost all the foreign investigators begin at 5 cc. of a 10 per cent solution (that being the average convulsant dose for a healthy adult male) and hope to get a convulsion at each injection. Women are usually given 4 cc. and asthenic individuals 3 cc. for the initial dose.[2] In case no convulsion occurs, the patient will complain of some dizziness, flushing, feeling of weakness, palpitation of the heart, and some apprehension. He is allowed to rest for the remainder of the morning, and the dose is increased by 1 cc. the following day.* Once the convulsive dose is reached, it is maintained until it produces no further convulsion. Tolerance to the drug is sometimes quite great and varies with the individual patient. Doses as large as 15 cc. have been given intravenously without any untoward effects.

Rate of Injection. The speed of injection is all-important in the production of convulsions. In the early days of the treatment, the drug was injected at specified rates. Some suggested 0.1 cc. per second, others consumed an entire minute for the injection. It was noted that a large dose (9 cc.) may be injected slowly without producing any convulsion. On the next treatment day with the rapid injection of, say, only 5 cc., a severe convulsion may be induced. The present consensus of opinion is to get the drug into the blood stream as rapidly as possible. Some workers use both hands on the syringe and compress the piston with both thumbs. By the rapid injection, much smaller doses of drugs are employed and the danger of toxicity lessened.

Reaction Time. The time between the termination of the injection and the beginning of the convulsive seizures is very short and varies from 5 to 60 seconds. In those cases in which the solution was slowly injected, the convulsion would sometimes begin before the needle was withdrawn from the vein. If there is no reaction within 2 minutes, no convulsion will occur and the patient will perhaps complain only of faintness and dizziness as aboved escribed.

The Convulsion. The convulsion lasts from 1 to 2 minutes and partakes of the nature of a typical, severe, grand mal epileptic seizure. Patients frequently have a brief aura a few seconds before the convulsion proper begins, and during this time experience an intense feeling of impending death. Others merely become wide-eyed, apprehensive, toss the head about restlessly from side to side, and nervously clear the throat. The convulsion may be initiated by a few arrhythmic jerks of the upper extremities, lasting 5 to 10 seconds. Suddenly, the face becomes suffused with blood, breathing stops completely, and the entire body stiffens in a severe tonic contraction. The arms and legs are held rigidly for a few seconds in typical carpopedal spasm. In a few more seconds, severe clonic movements of the large amplitude and high frequency begin in all parts of the body and last for about 40 to 60 seconds. These movements then decrease in intensity and tempo and finally subside spontaneously. The patient's color, which, during the convulsion has been flushed due to peripheral hyperemia, now becomes a deathly pale, ashen gray. During this time the patient is still unconscious, and the Babinski sign is positive. Respirations begin again, being shallow at first, but increasing in amplitude and regularity. The pulse, which has been racing, becomes slower and more regular, and the patient's color improves gradually. The total duration of the treatment from the time of injection to the recovery of consciousness is usually between 5 and 10 minutes. Urinary and fecal incontinence have been observed with great frequency. Seminal emissions, "automatic" masturbation, joint dislocations, etc., have been reported by others. Gillies reports some cases in which only the tonic spasms were exhibited. Others developed no muscular symptoms at all but displayed what the author calls "mental convulsions or furors."[6]

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*Because of rapidity of excretion of the drug many workers now (1938) repeat the same or give an increased dose about 30 minutes after the first successful injection in order to insure a convulsion on each treatment day.

Emergency Measures. Although emergencies in this treatment have been remarkably and fortunately few in number, the question of the proper procedure to follow is a difficult one to answer, since there is no true antidote for metrazol. In many of the clinics coramine (like metrazol, another cardiorespiratory stimulant) is kept on hand. Artificial respiration and a carbon dioxide-oxygen machine is used in cases of respiratory failure. Although no cases of status epilepticus are reported, should such a condition occur it is suggested that sodium amytal (administered intravenously) be the drug of choice. Temporary manual restraint is sometimes necessary to prevent dislocation of the extremities during exceptionally severe attacks.

Postconvulsive State. Immediately after the convulsion the patient may become very apprehensive, restless, and frightened, or, as in most cases, merely sleepy and drowsy. In almost all instances the patient has complete amnesia for the convulsion proper. Some patients are comatose for several hours, as in epileptics who have just experienced a grand mal attack. In Europe the patients are kept in bed for 4 to 5 hours before being given nourishment, and then they are given only liquids. At the Psychiatric Institute I saw a 19-year-old schizophrenic get up out of bed one half hour after an extremely severe convulsive seizure, and walk unassisted to the bathroom. I was informed that whether the patient gets up or not is left to the patient's own judgment and all the patients were fed ward diet with no untoward effects. It is best, however, to keep the patient in bed under the observation of trained personnel for at least 2 or 3 hours following the injection, whether a convulsion ensues or not.

In most cases when the patient is recovering from the postconvulsive state he is in a clouded state and exhibits an over-friendly attitude toward the physician, looking to him for support. It is this phase at which the patient is most accessible for supplementary psychotherapy. Surprisingly little mention of psychotherapy is made by the European authors, although Schilder at Bellevue Hospital rightly considers it a most important adjunct in the treatment. The recreational, re-educational, and occupational activities should be continued whenever feasible.

Course of Treatment. The usual course of treatment consists of a series of convulsions given twice a week until improvement occurs or until 20 convulsions have been induced. Many cases display complete remissions after the third or fourth convulsion. The most resistant recovery in the recent Bellevue Hospital series required 13 convulsions.[18] Von Meduna[13] recommends at least 3 attacks after a remission has been obtained. Other workers, notably in the mid-west, are giving convulsions every other day with only 1 rest day intervening between treatments. Von Meduna sometimes uses as many as 25 to 30 attacks. Generally speaking, however, if no improvement occurs after 20 convulsions, the treatment is stopped. Angyal and Gyárfás,[1,2] on the other hand, recommend the insulin treatment for those cases in which the metrazol has been ineffective, and by using this method they have increased their percentage of cures by about 20 per cent. Other workers in England and America have combined the insulin and metrazol treatments, giving metrazol once or twice a week to convulsive-resistant patients on days when insulin is omitted. Dr. Emerick Friedman utilizes a modification of the von Meduna treatment. He combines intravenously administered metrazol with intramuscularly administered camphor injections in daily doses so that the patient is kept in a continuous "confusional state" for 3 to 4 weeks. Both drugs are then completely withdrawn, and, in favorable cases, the patient emerges from the "confusional state" without psychosis.

Complications and Dangers. Von Meduna states that: "However appalling this treatment may seem, there is no inherent danger in the treatment. Up to the present (July, 1936) 1,000 attacks have been induced without any serious complications. This includes renal and electrocardiographic investigations."[11] During the first stage of the treatment, however, if the needle gets outside the vein, and the solution gets into the tissues, the veins may become thrombosed and inflammatory signs appear at the site of injection. Gillies mentions vomiting and tachycardia as occasional minor complications. Dislocations of the arm, shoulder, and even of the jaw have been reported in exceptionally violent convulsions. In all cases, however, the dislocation was reduced, and the treatment continued. In conclusion, von Meduna adds that, ". . . the cardiazol convulsions exert no deleterious and certainly no permanent influence on a healthy system, particularly not on the circulatory system."[11] Gillies believes the convulsions to be "no more dangerous (if used on a patient who is organically sound) than the idiopathic epileptic convulsion."[6]

Mortality. Only one mortality has been reported in the literature thus far and this by Angyal and Gyárfás in their recent series of 45 cases. This patient, a 31-year-old female with an acute psychosis of 2 weeks' duration with ideas of persecution, was given her first injection of 5 cc. without any convulsion ensuing. Three days later she was given a second injection of 7 cc., blinked her eyes, but had no convulsion. She became somewhat more active and got up out of bed. One half hour later she suddenly collapsed and died of heart failure while in the bathroom. Autopsy findings revealed aortic insufficiency and myocarditis.

Results. Although it is foolhardy to accept completely the statistical reports of cures in a disease so notoriously prone to temporary remission as is schizophrenia, it is, at least, interesting to compare the results of the various investigators. On one extreme, von Meduna claims an 80 to 90 per cent probability of cure in acute cases of less than 6 months' duration. On the other extreme is the report of the Psychiatric Institute of 8 chronic cases, in which the patients, having failed to respond to the insulin treatment, were given a course of metrazol with no subsequent improvement. A representative study based on both the type of dementia praecox and the duration of the illness is shown in these excellent tables (2 and 3) from the recent series of 45 patients presented by Angyal and Gyárfás.[2] It will be seen that no remissions occurred in the simple and hebephrenic types regardless of duration of illness. Generally speaking, the shorter the duration the greater the probability of

TABLE 2

STATISTICS OF ANGYAL AND GYÁRFÁS RESULTS OF TREATMENT

DURATION	NUMBER	COMPLETE RECOVERY	SOCIAL RECOVERY	IMPROVED	UNIMPROVED	DIED
I. Acute	24	9	1	2	11	1
II. Subacute	3	1	1	1	0	0
III. Chronic	11	1	0	2	8	0
IV. Chronic with tendency to relapse	7	3	1	1	2	0
Totals	45	14	3	6	21	1

remissions. The greatest recovery rate occurred in the stuporous and catatonic types. This is in sharp contrast to the four recoveries in the recent Bellevue Hospital series, all of which were in paranoid patients.

It is, of course, impossible to evaluate any of the results without at least a 5-year follow-up period. No case has been followed longer than 3 years, and the follow-up reports of the original von Meduna cases (treated in 1934) are conspicuously absent from the literature.

Metrazol vs. Insulin. It is tempting to compare this treatment with the hypoglycemic-shock treatment of Sakel. Certain it is that the metrazol therapy is far less costly and effects improvements in much shorter time. One of the most attractive features of the metrazol treatment is the avoidance of an unusual amount of trained personnel and equipment to carry out the procedure. The author has learned of several physicians who have treated ambulatory, extra-institutional schizophrenics in the office or in the home without any unusual complications. Ample care must be taken that the patient be under competent observation for at least 2 hours following an attack. The indiscriminate use of metrazol convulsions for a motley assortment of psychogenic disorders constitutes a real danger which cannot be too greatly emphasized.

The results of the two methods, if we can believe the statistics, are approximately the same. The dangers of the two treatments are about equal and neither one is inherently dangerous if conducted properly. Three mortalities have been reported in a total series of 500 under insulin treatment in the New York State System. The one mortality in metrazol in a series of 45 cases has already been mentioned.

Many of the proponents of the Sakel method, notably Joseph Wortis, believe that Sakel was fully aware of the therapeutic effects of the convulsive seizure, even though it be of hypoglycemia origin. Wortis attempts to correlate the two methods rather than make contrasts and comparisons between the two. "Meanwhile, it need not be assumed that the treatments are altogether different and distinct or mutually incompatible. On the contrary, since advocates of the insulin treatment have from the beginning recognized and valued the efficacy of epileptic seizures, they must welcome and accept the metrazol-induced seizures as a significant step forward. . . . If the exclusively convulsant treatment of schizophrenia by means of metrazol is in the long run to supersede insulin treatment, it must offer additional advantages than those of economy and simplicity."[22, 23]

TABLE 3

STATISTICS OF ANGYAL AND GYÁRFÁS TYPES OF CASES

TYPE	I ACUTE		II SUBACUTE		III CHRONIC		IV CHRONIC WITH TENDENCY TO FLUCTUATE	
	Number	Remissions	Number	Remissions	Number	Remissions	Number	Remissions
1. Stupor	5	5	1	0	1	1	2	2
2. Catatonia	13	4	0	0	2	0	1	0
3. Paranoid	4	1	2	2	7	0	4	2
4. Hebephrenic	0	0	0	0	1	0	0	0
5. Simple	2	0	0	0	0	0	0	0

THEORETICAL CONSIDERATIONS

This procedure, like many other inexplicable therapeutic methods, has not suffered from a paucity of explanatory hypotheses. Those offered range anywhere from illogical *post hoc* reasonings to orthodox freudian interpretations. That the psychoanalytic implications of the treatment are far-reaching and profound is undeniable, and already some explanations (e.g., the convulsion as an orgastic discharge) have been offered.

Although von Meduna's work sprouted from totally empirical grounds, he has conceived a theory to explain the *modus operandi* of his method from which he does not deviate. On the basis of the previously mentioned work of Nyirö and Jablonszky,[16] and Müller,[14] and his early observation on camphor and cardiazol convulsions, he formulated the following hypothesis.

"Between epilepsy and schizophrenia there is a biological antagonism. Should it be possible to induce epileptic attacks in schizophrenic patients, such epileptic attacks would change the chemical, humoral, hematological, and other aspects of the organism in such a manner that thereby, since the organism so changed would represent an unfavorable basis for the development of schizophrenia,—a biological possibility is given for a remission of the disease."[9]

Von Meduna goes on to state that the susceptibility to convulsions is the simplest index of the tendency to remission. In other words, patients that experience convulsions on small doses have a relatively good prognosis; patients that show great resistance to convulsions on even large doses have a relatively poor prognosis. "Perhaps," says Gillies, "the good effects are due only to a nonspecific stimulation of cerebral cells which had become functionally inactive. . . ."

TABLE 4

Results Obtained From Metrazol Therapy by Various Workers

WORKER	LOCALE	DATE	NUMBER OF CASES	RECOVERED OR IMPROVED	UNIMPROVED	REMARKS
				per cent	*per cent*	
L. von Meduna	Budapest, Hungary	1935–36	110	49	51	
Angyal & Gyárfás	Budapest, Hungary	1936	45	37	46	1 death
E. Friedman	Buffalo, New York	1936–37	51	66	34	
Singer, et al.	Chicago, Illinois	1936–37	90	45	55	
Schilder, Rosenbaum, Orenstein	Bellevue Hospital, New York City	1937	15	26.6	73.4	
Blalock, Harris, et al.	Psychiatric Institute, New York City	1937	8	0	100	Used only on chronic insulin-resistant cases

Dr. Nolan D. C. Lewis, speaking recently before the New York Academy of Medicine on the insulin-shock treatment, stated:

"This treatment has suggested a possible reversibility in the pathological processes behind dementia praecox. It has long been observed that anything which brings a schizophrenic near death, such as operations, physical and chemical trauma, etc., may also bring him out of his schizophrenia. The same type of shock may also precipitate a psychosis in an individual so predisposed. The question arises as to whether insulin shock would precipitate 'a praecox reaction' in a susceptible individual."

Future Problems

Whatever the eventual outcome of metrazol as a therapeutic agent in schizophrenia will be, there can be no doubt that it has stimulated and will continue to stimulate a great deal of significant research on both schizophrenia and the convulsive state. Already the blood picture and urine changes during the metrazol treatment have been studied, and they have been found to be exactly the same as that observed by numerous authors in epilepsy. Some workers have suggested that the differential diagnosis of true epilepsy and hysteria could eventually be worked out by the quantitative susceptibility to metrazol convulsions.[7] Finally, neurophysiologists and electro-encephalographers will now have an unprecedented opportunity to study variations in brain potentials in man during "grand mal" seizures which can be controlled at will.

Summary

A brief review of the origin, technic, results and theory of the metrazol therapy of schizophrenia (based on the available literature and personal observations of the treatment) has been presented.

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CALCIUM THERAPY IN PUERPERAL INFECTIONS*

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In considering the rôle of calcium in the treatment of puerperal infections it should be borne in mind that in this type of infection we no longer look upon the inflammatory phenomena as a defensive or even a reparative process. On the contrary and to prevent further extension of the disease, therapy is directed toward localizing the pathologic condition as quickly as possible. Inflammation here as elsewhere is characterized by local swelling due to exudation, pain resulting from increased tissue tension combined with smooth muscle spasm, increase in local temperature as a result of congestion, and an elevation of general body temperature due to absorption of toxic substances of bacterial origin and from tissue injury.

In conjunction with the general treatment of puerperal infections the most satisfactory medicament is one that will not only relieve the subjective symptoms but which will also improve the resistance of the patient, neutralize toxic substances and hasten the return of the pathologic state to a normal condition. Calcium, because of certain well known pharmacologic properties is a logical adjuvant in the treatment of this as well as other inflammatory disorders.

Bayliss[1] showed, many years ago, that the calcium ion decreases cell permeability and thus tends to limit the exudation and transudation that accompany inflammation. According to Hamburger[2] the ratio of calcium, sodium and potassium ions in a perfusing fluid is the determining factor in the formation of edema. The calcium ions tend to raise the resistance of the capillaries to permeation and at the same time act as a capillary stimulant, while the sodium and potassium ions on the other hand tend to increase the permeability of the capillary walls and favor exudation. Blum[3] believes that the administration of calcium reduces the sodium content of the blood and prevents the migration of this ion into the tissues. Since water follows sodium the accumulation of fluid which generally accompanies inflammation is therefore inhibited by calcium. Januschke[4] first showed that typical inflammatory reactions produced by mustard oil can be prevented by the previous administration of adequate doses of calcium. Gold,[5] and Rothlin[6] both found experimentally that pleural effusion produced by the intrapleural injection of copper sulphate is considerably reduced by calcium salts. Smejkal and Pisani[7] concluded from their observations on the use of calcium gluconate in artificial pneumothorax that the calcium ion not only limits exudation and transudation but hastens the absorption of any exudate already present.

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* Read at the Second Annual Alumni Extension Course of the Georgetown University School of Medicine, September 14, 1937.

Clinically, Behan[8] found that the pain of cancer was entirely controlled or greatly modified by calcium injections, and Bauer, Salter and Aub[9] secured dramatic relief from the abdominal distress of gallstone, renal and intestinal colic by the same method. Herrold,[10] Rupel,[11] Cerf,[12] and Leff and Spencer[13] have reported that both pain and edema in gonorrheal epididymitis disappear rapidly following intravenous infusions of calcium. Von Zalewski,[14] Pizzi,[15] Diasio,[16] Parvey[17] and others have noted favorable results with calcium therapy in gonorrheal salpingitis, particularly in the acute forms, and Parvey also pointed out its value as a hemostatic in gynecologic conditions in which bleeding is a symptom.

Theobald[18] reviewed the literature on the therapeutic use of calcium in eye conditions and has reported good results with it in her own practice in acute and chronic uveitis, herpes of the cornea and corneal ulcer. Still others, including Nühsmann[19] and Geiger,[20] recommend the prophylactic use of calcium in operations on the nose and sinuses to reduce postoperative swelling and edema.

Tunnicliff[21] and others have demonstrated experimentally on both man and animals that calcium increases phagocytosis by the leukocytes of the blood. Phagocytosis is, of course, one of the protective mechanisms of the body. Finally, Minot and Cutler[22] showed that calcium protects liver functions and is a physiologic antidote for toxic products generated from tissue injury occurring in the course of toxic states.

All of these properties of the calcium ion have a place in the treatment of puerperal infections. With calcium therapy the lower abdominal tenderness and pain are quickly relieved, the temperature rapidly returns to normal, and further exudation is not only checked but the reabsorption of existing exudate is hastened.

Previous to the introduction of the gluconic acid compounds of calcium, the chloride and lactate were generally used. The irritating effects of both the chloride and lactate salts make these unsuitable for intramuscular injection, since their irritant action may cause induration and even abscess formation. Calcium chloride in particular is relatively quite toxic. The nausea and vomiting that sometimes follow its intravenous administration and the other symptoms of shock that may accompany its use, unless it is given very slowly and with the greatest of care, limit its practical usefulness. Furthermore, both the chloride and the lactate are unpalatable and not suitable for prolonged oral use.

These objections have been overcome by the development of calcium gluconate (Calglucon) which is available in the form of tablets and granules for oral administration. Calcium gluconate contains 9.3 per cent of calcium ion; the gluconic acid radical, an oxidation product of glucose, is completely burned in the body. For safe intravenous infusion and painless intragluteal injection the double salt of calcium gluconate and calcium galactogluconate is now being used and is available, under the trade name Neo-Calglucon, in stable ampule solutions equivalent in calcium-ion content to 10 per cent and 20 per cent solutions of calcium gluconate. The method of administering calcium employed in this study is a combination of that described by von Zalewski supplemented by oral administration. The contents of a 10 cc. ampule of Neo-Calglucon were taken into a 20 cc. syringe, the needle was then inserted into a vein, and 10 cc. of blood was withdrawn and permitted to mix with the calcium solution. One half of this mixture was reinjected into the vein, and the other half, after withdrawal of the needle, was injected deeply into the gluteal muscle. This method combines the rapid and intense effect of the intravenous injection with the slower but more sustained action of intramuscular absorption and in addition induces protective protein therapy action.

Daily injections were given in the majority of cases but usually were not required beyond 10 days. To intensify and prolong the effects established by the injection 1 heaping teaspoonful of calcium gluconate granules was given 3 times each day in milk or water. Oral dosage was continued even after the patient was discharged from the hospital to prevent any possible excitation of the infectious process.

In the obstetrical patient the violent peristaltic action of the tubes at the time of labor may result in the exacerbation of a latent infection. Parvey, for instance, reported the reappearance of symptoms of tubal inflammation following abortion. Further, a new infection may gain entrance to the uterus through the open blood or lymph sinuses.

This study based on 26 puerperae in whom the temperature persisted above 101°F., for more than 48 hours without a demonstrable cause outside of the pelvis. The chief complaint was abdominal pain and tenderness located in the lower portion of the abdomen. The pain was bilateral in 18 cases and unilateral in 8. Other complaints were frequency and urgency of urination. In 14 cases the vaginal discharge was putrid, and in the remaining 12 the discharge had decreased, although the constitutional symptoms were greater. Microscopic examination of the discharge from both cervix and urethra was positive for gonococci in 2 cases and negative in 24.

The treatment employed in this series of 26 cases was:

Rest in bed.
Ice bag to the lower portion of the abdomen.
Elevation of the head of bed.
Fluids in quantity.
Milk of magnesia when necessary.
No sedatives, douches or powerful cathartics.
Neo-Calglucon, 1 ampule of 10 cc. of the 10 per cent product injected intragluteally and intravenously as suggested each day.
Calcium gluconate granules, 1 heaping teaspoonful 3 times daily before meals in warm milk.

While injections were painless there was a generalized sense of warmth that lasted from 2 to 3 hours. The calcium given orally acted as a mild laxative, and as a rule no milk of magnesia was required.

With this treatment the average hospitalization period was 14 days, varying from a minimum of 9 days to a maximum of 22 days. This disability time compared favorably with that in a similar group observed previously and to which the same treatment was given except for the omission of the calcium. The following table gives the essential data in this series of cases.

PUERPERAL INFECTIONS

Number of cases treated—26.

	MINIMUM	MAXIMUM	AVERAGE
Number of days of fever	3 days	8 days	6 days
Duration of pain	24 hours	72 hours	44 hours
Duration of abdominal tenderness and rigidity	52 hours	7 days	6 days
Number of injections	9	24	10
Total disability	9 days	22 days	14 days

In those cases treated with calcium there was rapid alleviation of the pain so that the patients were able to rest comfortably. In 19 cases the pain disappeared within 34 hours, in 4 cases within 48 hours, and in the rest within 72 hours. Rigidity of the abdomen was gone in 52 hours, and tenderness on pressure disappeared within 6 days. The temperature curve returned to normal within an average of 6 days. Calcium therapy relieved the pain so dramatically and so uniformly that if for no other reason calcium should be used in the treatment of puerperal infections.

At the time of dismissal all patients were given a pelvic examination. If there was any evidence of an inflammatory process, calcium was continued orally 3 times daily.

SUMMARY AND CONCLUSIONS

A series of 26 cases of puerperal infections was observed. In this series Neo-Calglucon was given intravenously and intramuscularly, supplemented with Calglucon by mouth in addition to the well established routine treatment.

The average period of hospitalization was 14 days as compared to 21 days for a comparable group in which no calcium was given.

Relief from pain was impressive and occurred in most patients within 24 hours after beginning treatment. The patients became comfortable and were able to rest.

Rigidity of the lower abdominal and pelvic tissues disappeared in 52 hours. Tenderness on pressure over the lower abdomen was gone in from 4 to 6 days, and the temperature had dropped to normal.

No untoward reactions were noted following the injection of calcium intramuscularly or intravenously.

Because of the constant diminution of hyperpyrexia, pain and disability, and the possibility of reducing the mortality, the deduction was made that calcium therapy is uniformly satisfactory and can be used safely in the treatment of puerperal infections.

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A SURVEY OF CHILDHOOD PNEUMONIAS*

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During the past few years comparatively few purely clinical or statistical surveys of lobar and lobular pneumonia in children have been made. There are several studies on the age and sex distribution of the pneumonias in children, particularly the so-called bronchopneumonias or secondary interstitial forms following pertussis, measles and the other exanthemata. The cases studied in this series are, with few exceptions, those of primary pneumonia which occurred in the Children's Hospital, Washington, D. C., and either recognized in the course of a minor upper respiratory infection treated in the outpatient department or in the emergency ward during the period from January 4, 1936, to December 26, 1936. In the District of Columbia patients with the exanthematous and communicable diseases are isolated when necessary in the contagious disease building of the Gallinger Municipal Hospital.

Immediately on admission, patients with an acute upper respiratory infection are carefully examined for pneumonia. The clinical diagnosis of lobar pneumonia is based on the definite physical signs of localized pulmonary consolidation confirmed either by fluoroscopy or by a radiographic picture or both and terminally by postmortem examination. We here use the term lobular pneumonia to mean the disseminated form of pneumonia as distinct from bronchopneumonia which refers to the secondary type of interstitial pneumonia. Scattered areas of bronchial breathing with crepitation, cough, prostration, a typical febrile course with hurried breathing, even in the absence of opacities in the X-ray film, were considered as evidence of a disseminated pneumonia, and the fact was kept in mind that this condition may exist without any signs of consolidation at any period during its course. All acute upper respiratory infections with high temperature, rapid respiration and a leukocytosis were considered as pneumonic until proved otherwise.

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* From the Children's Hospital, by the kind permission of Dr. Frank Leech, Chairman of the Medical Staff.

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In this series we have studied 423 children with the diagnosis of pneumonia during the past year, of which 243 were diagnosed as lobar pneumonia and 180 as lobular pneumonia. Of these patients, 116, or 27.2 per cent, were under 1 year of age; 93, or 21.9 per cent, were between 1 to 2 years of age; 137, or 32.3 per cent, were between the ages of 2 to 6 years; and 77, or 18.2 per cent, were 6 years of age and over. These figures differ somewhat from those of Bullowa,[1] and Ellenberg and Martin.[2] The former reports that 32 per cent of his cases occurred during the first 12 months of life and fell rapidly thereafter, with only 10 per cent in the third- and 7 per cent in the sixth-year groups. Ellenberg states that 40 per cent of his total series were under 3 years of age, while 50 per cent were under 4 years of age.

TABLE 1

Age and Sex Incidence in 243 Cases of Lobar Pneumonia, With Case Fatality

AGE	TOTAL		RECOVERED		DIED	
	Male	Female	Male	Female	Male	Female
0–6 months	11	9	8	6	3	3
6–12 months	18	9	15	5	3	4
12–18 months	23	13	23	12	0	1
18–24 months	7	6	7	6	0	0
2–6 years	48	46	43	42	5	4
6 years and over	33	20	30	19	3	1
Total.	140	103	126	90	14	13

TABLE 2

Age and Sex Incidence in 180 Cases of Lobular Pneumonia, With Case Fatality

AGE	TOTAL		RECOVERED		DIED	
	Male	Female	Male	Female	Male	Female
0–6 months	17	23	5	5	12	18
6–12 months	16	13	8	8	8	5
12–18 months	21	11	18	8	3	3
18–24 months	6	6	3	5	3	1
2–6 years	26	17	23	13	3	4
6 years and over	17	7	13	5	4	2
Total.	103	77	70	44	33	33

The case fatality rate was much higher among those patients with the disseminated form, 66 deaths occurring in 180 cases, or 36.6 per cent, than among the cases of lobar pneumonia, in which group 27 deaths occurred in 243 cases, or 11.1 per cent. It is interesting to note that although the case incidence in the youngest age group was low, only 27.2 per cent, the case fatality for the same age group was highest in both lobar and lobular pneumonias, with a mortality of 30 per cent in the former and 75 per cent in the latter. This higher mortality from the disseminated form of primary pneumonia is probably due to the tender age and lessened resistance of the patient in whom it occurs. This figure is in close agreement with that obtained by Bullowa in his large series of 1,000 cases, although the case fatality for the lobar pneumonias is somewhat higher than that reported by other authors (Tables 1 and 2).

When the cases were divided into lobar pneumonias and lobular pneumonias, and into those under 2 years of age and those over 2 years of age, it was found that 39.5 per cent of the lobar pneumonias occurred in infants under 2 years of age, with a case fatality of 12.5 per cent, and that 62.7 per cent of the lobular pneumonias, with a case fatality of 46.9 per cent, occurred in the same age group. Of the lobar pneumonias 60.4 per cent occurred after 2 years of age as compared with 37.2 per cent of the lobular pneumonias, and the case fatality in the latter was 19.4 per cent, while in the former it was only 8.8 per cent. This corresponds with the statements that in young infants lobular pneumonia is almost twice as fatal as lobar pneumonia (Tables 1 and 2).

For all ages, 56.6 per cent of the recorded deaths were due to the pneumonia itself, while 43.3 per cent of the deaths were due to a complicating factor. In patients under 2 years of age, 58.8 per cent of the deaths in the lobar pneumonia group were due to the primary condition, with 41.6 per cent due to a complication, while 56.6 per cent of the lobular pneumonia deaths were due to the disease itself and 43.4

per cent due to a complication. In the age group of 2 years and over, the deaths were equally distributed among the primary condition and complicating factors, while 61.5 per cent of the lobular pneumonia deaths were primary with only 38.4 per cent due to complications. We are unable to explain this persistent high case fatality for the disseminated form of pneumonia, a fact which is directly opposed to the generally accepted views on the subject.

Most authorities state that there is a marked preponderance of males suffering from primary pneumonia. This has been shown to be true in adult life as a result of differences in exposure and occupation, but as yet there have been no definite conclusions made on this point with reference to the disease in infancy and childhood. When the sex incidence is tabulated for the younger ages there is found to be a moderate disproportionate selection of males in almost every age group, although some authors have been unable to report similar findings. Ellenberg and Martin; McNeil, Macgregor and Alexander[3]; and Moody[4] report moderate increases of incidence of males over females. In our series there were 243 males affected as against 180 females, although the case fatality rate was somewhat higher among the females. This point needs further study based on larger groups of cases.

The commonest complications encountered in this study in their order of frequency were empyema, pertussis, diphtheria, congenital heart disease, sepsis, status thymicolymphaticus, anemia including 1 case of lymphatic leukemia, meningitis, and measles. Empyema occurred in 14 cases, or 20.4 per cent. This is in contradistinction to Holt,[5] who reports it as occurring in only 8 per cent of cases, and to Hill,[6] who reports it in 4 per cent of his cases with otitis media as the primary complication in 28 per cent of his cases. We were unable to find a single case of otitis media in the entire series of 423 cases.

SUMMARY

In a series of 423 cases of childhood pneumonias studied at the Children's Hospital, Washington, D. C., it was found that 243 were of lobar and 180 of lobular type. Up to 2 years of age lobular pneumonia occurred in 62.7 per cent of the cases with a case fatality of 46.9 per cent, whereas for the same age group lobar pneumonia occurred in only 39.5 per cent with a case fatality of 12.5 per cent. In the age group of 2 years and over, lobar pneumonia was present in 60.4 per cent of the cases with a case fatality of 8.8 per cent, while the lobular pneumonias showed an incidence of only 37.2 per cent with a persistently high case fatality of 19.4 per cent.

There is a greater tendency for complications to develop in the earlier age groups, more so when the primary pneumonia is of the disseminated form, whereas in the older age group the tendency is for complications to be associated with lobar pneumonia.

A moderate preponderance of cases was found among the males for all ages, but only a slight significant difference between the sexes with respect to case fatality could be found in the youngest age group.

The primary complication in this series was found to be empyema, which occurred in 20.4 per cent of the cases studied.

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SOME RECENT CONTRIBUTIONS OF PATHOLOGY TO CLINICAL MEDICINE

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"The body of knowledge that has accumulated in the search for disease causes, and the nature of disease states, constitutes pathology, a science inspired not simply by the practical aims of clinical medicine, but increasingly by the intellectual stimulus of acquiring knowledge for its own sake. Pathology is concerned with the entire natural history of disease; in other words with the sequential order of disease causation, disease course, and the resultant effect in the host." It is evident that these definitions give to pathology an almost unlimited scope, which in American medicine has been broken up into several fields, each bearing a name. Presumably this permits a more efficient administration of practical and theoretical considerations but it undoubtedly takes from pathology much that in the Continental sense of the term belongs to it.

The broad nature of the title of this paper would allow the discussion of many points of interest to the profession. A selection has been made, however, of three topics, chosen primarily because I believe them worthy of discussion and secondarily because they deal with matters with which my researches and studies have made me somewhat familiar.

"Tropical Medicine"

The first is "The Vanishing Boundary of Tropical Medicine." Ten years of residence in subtropical areas in Africa and Asia and two years spent in the deep South have given me an interest in the diseases called tropical. In 1926 I reported to the League of Nations' Committee, headed by Professor Pittaluga, of Madrid, the first case of infantile kala-azar to be recorded from western Asia.

Two decades ago it was general belief that tropical diseases occur only in certain places, distinctly set off by geographical boundaries. The northern United States was not thought of as an area subject to invasion by tropical diseases. In a recent address, in which he reported the occurrence of the second case of visceral leishmaniosis from the Children's Hospital in Boston, Richard P. Strong said: "It has been supposed, heretofore, that the three centers for tropical diseases in the United States are in New York, New Orleans and San Francisco. There is no reason to suppose that the conditions which earlier determined these three cities as tropical disease centers by virtue of their relationship with world commerce, their foreign population or their geographical location any longer operate to restrict diseases called tropical within their confines."

The speed of modern commerce has greatly increased. The opportunities which aeroplane travel offers for the spread of disease should be recognized. A less dramatic, but possibly more insidious menace is to be found in the vast movements of population, often from lower economic levels, from north to south and vice versa via automobile and especially via trailers. It is to be marvelled at that the concentration of irresponsible transients in the Nation's capital in 1933 and 1934 did not introduce more of the diseases of the south. Centers of population need no longer be in subtropical climates or at ports of entry to receive patients suffering from tropical diseases. Washington, by virtue of its importance as the capital of the nation, a beautiful and historical city to visit, not a bad convention town, and the goal of past and future pilgrimages of "marchers" and lobbyists must be prepared for the diagnosis and treatment of tropical diseases.

It is true that no widespread outbreak of tropical disease can occur here in those instances in which the transmission of the disease depends upon the local presence of some essential insect or other vector which is foreign to our environment. Thus we shall never be afflicted with outbreaks of schistosomiasis or of African sleeping sickness. But cases of these and other tropical diseases may come here and it should be possible to diagnose and treat them locally.

A very vivid impression was made on me a number of years ago, while living in Chicago, by the case of the wife of a returned missionary whose ailment baffled diagnosis in the entire middle west. It was only when she was taken to London that it was discovered she was a victim of trypanosomiasis and proper treatment instituted.

Of even greater importance is the fact, forced upon us within the last 5 years, that some tropical diseases not thought to occur in our climate may be found here and in epidemic form. I refer specifically to the amebic dysentery outbreak at the Chicago World's Fair in 1933. In this outbreak, occasioned by polluted water in two Chicago hotels, there were at least 1,409 cases of amebic dysentery, of which only one fifth were correctly diagnosed originally. In comment on this situation Richard P. Strong stated that during 14 years of Philippine medical history with which he was particularly familiar, 1899 to 1913, there was never in the islands any such disastrous epidemic of water-borne amebic dysentery.

In the Chicago epidemic in half of the fatal cases mistaken diagnoses were reported and in more than two thirds of these the cases were treated surgically! Forty-one, for instance, were diagnosed as appendicitis and there was a case fatality among the 31 operated upon of 41 per cent. In no case did a fatality follow early consultation, correct diagnosis, and the institution of specific therapy.

The illusion that such an outbreak cannot happen again was cruelly shattered by events following upon the Chicago Stock Yards fire of May, 1934. In order to fight this fire effectively and to provide water for the live stock a supply was utilized which was polluted with sewage from what was once known as Bubbly Creek. This water was inadvertently used for drinking purposes by some 300 firemen and 7,500 spectators. In addition to wholesale gastro-enteritis there resulted from this incident 78 cases of typhoid fever and 6 frank cases of amebic dysentery. Examinations were made of a considerable number of those who drank the water, and it was found that 56.9 per cent were harboring Endamoeba histolytica, the etiological agent of amebic dysentery. Hardy reports that in the Chicago area about 15.5 per cent of persons examined carry this parasite. It seems from Hardy's work that a certain concentration of these parasites has to be present in the bowel before the disease breaks out. But with about 1 in 6 persons carrying the parasite it is easy to understand that we must consider the disease as potentially endemic and only waiting on opportunity for epidemic manifestation. We must now add amebic dysentery to the list of intestinal diseases we are prepared to look for and treat.

Another illustration of a parasitic disease, hitherto held in little repute, which we must pay more attention to in the future is trichinosis. Maurice C. Hall and his associates have clearly shown that when it is looked for infestation with this worm will be found in a significant number of cases. Thus the presence of trichinae was demonstrated in 13.67 per cent of 300 cadavers from 11 Baltimore and Washington hospitals. Collected figures derived from 11 widely separated cities show that 222, or 12.5 per cent, of 1,778 cadavers contained the parasite, and in many the number of trichinae present per gram of muscle (diaphragmatic) was high. In not one of the 222 was a diagnosis of trichinosis made prior to autopsy. Hall states: "So far as the physician is concerned, we have been misled by the idea that parasitology is a phase of tropical medicine and that tropical medicine is a matter that concerns the physician in the Tropics. . . . Today, all physicians, well informed in tropical medicine, recognize that diseases and parasites most prevalent in the Tropics are merely predominatingly prevalent in the Tropics, but that almost all of them are plentifully present in temperate regions and should be known to physicians in those regions."

Again, it is increasingly true that bacteria isolated from many of our borderline dysentery and diarrhea cases and from some food poisoning are being identified with forms described by such workers as Castellani from cases they encountered in tropical areas. One illustration will suffice. The Bacillus asiaticus, described in 1912 by Castellani from enteric-like fevers, has in a recent study by Alves of South Rhodesia been shown to be an atypical colon bacillus such as we have encountered locally in stool studies.

Looking at the matter from the opposite side of the fence we may note that McKinley, in his studies on the "Geography of Disease," has shown that diseases thought of as restricted to temperate areas are found to occur in the Tropics when we examine the records carefully enough. While I was in the Near East I made a survey among 2,301 persons to determine the occurrence of measles, mumps, whooping cough, chickenpox, scarlet fever and diphtheria. All of these diseases were found to occur, although the ratio was slightly different from that I found to hold for groups in the Washington area surveyed for the same diseases. Scarlet fever is one of the diseases reputedly absent from tropical areas. The truth of the matter would seem to be that there are differences in prevalence of the different diseases in different parts of the world but that the keen physician, whether he practices in Washington, in Alexandria or in Calcutta must be on the alert for anything. We cannot *a priori* rule out a diagnosis because it calls for a disease uncommon to our area.

THE ETIOLOGY OF PUERPERAL FEVER

My second point deals with the etiology of puerperal fever. A correct concept of this disease has waited upon the development of a proper understanding of the streptococci. Probably no group of bacteria is of more importance in medicine than the streptococci, and probably no group has been harder to understand until recently. Bacteriologists have long studied streptococci according to their reactions on blood agar. We speak of hemolytic streptococci and of Streptococcus viridans, and we encounter a third group of streptococci, particularly from feces, which appear neither to hemolyze blood agar nor to make it green. We have assumed that the most virulent streptococci are hemolytic, and that is true. But when it came to going further with these hemolytic streptococci we utilized various means but got nowhere.

Now hemolytic streptococci are studied by means of serological tests and by these tests are divided into nine main groups,—A, B, C, D, E, F, G, H and K. Within the groups there appear, in some cases at least, to be a number of types. To help describe the groups new tests have been utilized of which 4 seem most important, namely, the production of soluble hemolysin, hydrolysis of sodium hippurate, growth on 10 per cent and 40 per cent bile agar, and the ability to dissolve human fibrin. It has been found that most of the hemolytic streptococci causing human disease belong to group A. Group A hemolytic streptococci do not hydrolyze sodium hippurate and they do not grow on either 10 or 40 per cent bile agar, but they do digest human fibrin and they form soluble hemolysin. In addition they ferment lactose, salicin and trehalose, but they do not ferment mannitol and sorbitol. Development of an accurate knowledge of streptococci has not kept pace with the similar development in the pneumococcus field. This has been because of greater difficulties of a technical nature in the streptococcus field and because of less apparent utility in the ends to be gained from a better knowledge of specificity in the streptococcus field.

Two recent emphases in this field make it likely that more speed will result in the race to complete our knowledge of streptococci. The newer knowledge which we do have has given us a basis for understanding the limits of chemotherapy by prontosil and similar compounds, at the moment so much in the medical eye in the treatment of coccus infections. So far as the streptococci are concerned the great success of the new chemotherapy must be qualified by a proper knowledge of the groups of streptococci which can be successfully treated. Some attention to such details will make it possible to avoid mistakes in chemotherapy which will be dangerous and confusing. Never in medical history has the stage been better set for a scientific development of a chemotherapy.

The part that exogenous infection plays in childbed fever has long been realized. Since the tragic career of Semmelweiss, and the wise teachings of Holmes, obstetricians have known something of the need for asepsis in the delivery room. They have known that by and large puerperal sepsis is caused by streptococci. But they have been comforted in their untoward cases by two points made by bacteriologists of the past. One of these has been the fact that anaerobic streptococci are found in the vagina, and the other is the equally true statement that hemolytic streptococci, not of the strict anaerobic type, are also found in the vagina. Thus we have gravitated to the point of view that sepsis at childbirth is largely of intrinsic or endogenous origin. Preventive measures have as a result been directed to a minimizing of vaginal examinations and a reduction so far as possible of trauma in delivery.

Unfortunately recent researches of the highest order obligate us to restate the situation. Careful studies have shown that the anaerobic streptococci of the vagina do not cause more than about a third of the sepsis which occurs, and the type of infection which these bacteria incite is not the fulminating type most to be dreaded. It seems probable that the vagina is the natural home of these anaerobic streptococci and that when they invade the uterus the damage which they occasion is not the sort which brings about the gravest situations.

What then is the cause of the majority of cases of puerperal sepsis, including by far the bulk of the most severe cases? Recent work indicates that these cases are caused by hemolytic streptococci of group A. The hemolytic streptococci found normally in the vagina are not of this group. Group A streptococci occur in the diseases of streptococci which have as their loci, the nose and throat. Such streptococci are not found normally in the vagina. They do not occur in the feces of a woman who is healthy, and they are not recovered from the perineal or perianal skin. They come from the noses and throats of three groups of persons, namely, the attendants, the visitors, and the patients themselves. From the upper respiratory tracts of these three groups the group A streptococci are transferred to and live for a time on the hands, in the air and on inanimate objects or fomites. The patient may even inoculate herself with her fingers from her own mouth or transfer to her body streptococci which some visitor has given her in salutation. In examinations, in routine hospital handling, and in the preparation for the delivery room the subject may receive group A streptococci from attendants, nurses, students, interns or doctors. One need not be suffering from a septic sore throat in order to be a carrier of streptococci capable of inciting puerperal sepsis.

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Thus we see that the modern concept of the etiology of puerperal sepsis places the emphasis once more on exogenous or extrinsic infection. Prevention therefore calls for the most rigid adherence to principles of asepsis which must extend not only to the periods of examination and delivery room attention but to the care and contacts of the patient in the ward before and after delivery.

The Tuberculin Test

I wish, lastly, to discuss the tuberculin reaction. There is probably no subject of general medical interest less correctly understood than the tuberculin reaction. This is due in part to the faulty teaching regarding the reaction and in part to the remarkable and rapid changes in the concept of tuberculosis which has given a new meaning to the usefulness of the tuberculin reaction. The current belief is that practically all adults react positively to the introduction into their skin of a dose of tuberculin. One of the best bacteriology texts of recent years says that 94 per cent or more of all adults are positive reactors to tuberculin.

As a result of our present point of view any diagnostic use of tuberculin by the medical profession is limited to pediatrics. The error in this point of view dates back to our too literal acceptance of the early figures obtained in European clinics, particularly Vienna. We have been misled by those figures. Von Pirquet himself commented on the large number of tuberculin positives encountered in his clinic and expressed the opinion that similar figures probably would not be obtained elsewhere. He records that his children came from the poorest economic strata in which many of the parents were tuberculous, and he makes the statement that tuberculosis is "notoriously prevalent in Vienna."

I became interested in the tuberculin test in 1920 when I was in a group taking a course on tuberculosis and tested by Dr. Esmond R. Long. At that time I had the dubious honor of sharing with Dr. Long the most strongly positive reactions of any of the members of the group. Since that time I have carefully followed the evolution of methods and results of the tuberculin test and have tested some 2,000 persons in the Near East and in the Washington area. In this interval of time I have seen a situation develop in which today tuberculin, a valuable diagnostic aid in any age group, is almost entirely overlooked by any but the most progressive clinics.

It was my belief in the Near East that the population of that area was an incompletely tubercularized one. My positive results ranged from 19.1 per cent for 94 boys and young men in a mountain school and orphanage to 83.4 per cent for 145 inmates of an insane asylum and averaged 47.6 per cent for 944 individuals from 10 different sources. Such a figure did not seem low to me, despite the institutionalized character of the population tested, in view of the belief that the residents of the area are semi-primitive relative to tuberculosis.

Recently I tested over 400 medical students in the Washington area and obtained for this 5 years of work a figure of 72 per cent positive reactors. These figures in themselves are not strikingly low, but they do indicate that young adults, even in the dangerous work of the medical student, are far from being all positive. If we take out one class of medical students, predominatingly from large cities of this area and containing many students of foreign extraction, we have left 338 students of whom only 224, or 66.2 per cent, were positive to tuberculin. Of these 5 classes 2 aggregating 139 students contained but 76 positive reactors, a percentage of 54.6. No one of the last 4 classes tested has had as many as 80 per cent of its members positive, and none of the last 3 has been over 61 per cent positive.

Of even greater significance are the larger data published in 1937 by two groups of workers. Long and Seibert reported on 18,744 men and women college students and found a range for the positive reactors among the men of from 21.4 per cent for 1,120 men at Ames, Iowa, to 81.1 per cent for 69 men at the New Mexico State Teachers' College. The women ranged from 15.3 per cent for 527 women in 6 Idaho colleges to 79.0 per cent for 86 women at the New Mexico State Teachers' College. One hundred and twenty male medical students, with an average age of 22.5 years, at Emory University were but 48.3 per cent positive.

Again, Whitney and McCaffrey have summarized a nation-wide tuberculin survey. This survey comprised tests on 56,688 individuals from 30 states and the District of Columbia. All ages, both sexes, and all races were tested, and the corrected rate for the country has been put at only 47 per cent of positives. In this group there were 41,493 whites with a crude rate of 28.8 per cent; 7,823 negroes with a crude rate of 43.3 per cent; 7,159 Indians with a crude rate of 72.4 per cent; and 213 others (Orientals, Mexicans, etc.) with a crude rate of 34.7 per cent. Careful studies have shown what corrections have to be made for sex, age, race and nativity. When these corrections were applied the corrected figure came to 47.0 per cent for the country as a whole. It was noted that foreign-born are more highly positive than native-born and that there is a higher degree of positiveness in the east and in the far west. Sex difference is slight, with the female more positive for the age group of 5 to 9 years, but with the male higher at all other ages. Differences between the whites and the colored were much less than one would expect, the corrected rate for negroes being only 47.8 per cent, which is but little higher than the figure for the whites which is 46.5 per cent.

In other words, if the physician is dealing with a native-born white adult the chances are 50 per cent that the patient is tuberculin-negative if he is not suffering from clinical tuberculosis. If the question of tuberculosis arises a tuberculin test is in order even for an adult. A negative result rules out tuberculosis, a positive result permits a diagnosis of tuberculosis should other signs and symptoms warrant it. I am firmly convinced that a wide appreciation of this point would be a great aid to general medicine, which has hitherto avoided tuberculin tests in adults because it was thought the result would always be positive. The test should be of particular value in such conditions as ocular tuberculosis and indefinite and vague chest conditions as well as in all possible tuberculous conditions in which differentiation is difficult. I know of a young college student in a midwestern city who spent many anxious hours because the physicians could not decide whether he had laryngeal lesions of tuberculosis, cancer or syphilis. In such a case in addition to a Wassermann test a tuberculin test should be done. A negative test would eliminate tuberculosis. I am further convinced that the usefulness of diagnostic tuberculin will increase from year to year. It is not unlikely that another decade will see at least a doubling in the value of this test as a means of ruling out tuberculosis or of permitting its diagnosis.

To understand this last statement and the modern tuberculin situation in general we should note that the anti-tuberculosis program has begun to bear fruit. The Lymanhurst Health Center at Minneapolis in 1926 tested 2,118 school children with tuberculin and found in this number 47.33 per cent of positives. In 1936 the Center tested 4,549 children, and the number of positives in a comparable group had in 10 years' time fallen to 17.9 per cent. In 1930, in Detroit, 5,044 children were tested and 54 per cent reacted positively, whereas 5 years later, in 1935, when 5,504 children were tested, but 26 per cent reacted. It is likely that decreases similar to these are taking place all over the nation. Is it any wonder that with the national figure now at approximately 50 per cent we dare to prophesy that in another 10 years it may drop to 25 per cent? Is it any wonder that we urge physicians, with increasing confidence, to make use of diagnostic tuberculin in all age groups?

Great advances have been made in the technic of tuberculin testing through the use of known graded doses of purified protein derivative and of the Mantoux intradermal test in preference to the old von Pirquet scratch method.

Tuberculosis is one of those diseases in which little immunity is produced. In tuberculosis the body produces no appreciable amount of any known antibody. But in tuberculosis there is produced a sensitivity of the tissues known as tuberculin allergy. "In the human body, when the time of exposure is quite accurately determined, it requires from 3 to 7 weeks for the tissues to become so sensitized as to give such a reaction" (tuberculin reaction). "In human medicine, one must recognize the fact that a positive tuberculin reaction indicates the presence of tuberculosis somewhere in the body." Should the bacilli in the lesion completely die out the tuberculin reaction will shortly become negative. It is true that the introduction into the body of dead tubercle bacilli, or even of the protein content of tubercle bacilli, will sensitize the tissues, but this artificial sensitization is of short duration because the tuberculoprotein which brings about the sensitization is eliminated and is not further produced.

It is therefore possible for the tuberculin reaction to be used to indicate the final sterilization of the body of a person who has been infected, although admittedly such usage does not appear to have great practical value. One of our students, first tested 4 years ago, was at that time sensitive to minimal doses of both old tuberculin and the purified product then in use. When retested this year this woman reacted negatively to the strongest dose of tuberculin administered. This student had been a nurse before she went into medicine. Sometime as a girl or as a student or practitioner nurse she was invaded by tubercle bacilli which succeeded in setting up a primary complex. This did not develop and must have been completely eliminated and sterilized, or so completely calcified that no tuberculoprotein could escape into the tissues, all this taking place while she continued her medical studies and contacts with patients in the wards. This is certainly unusual, since the usual experience is for the young student who is tuberculin-negative to become positive as he studies medicine, if any change takes place.

Repeated tuberculin tests on selected groups such as nurses or medical students might well be used to discover cases which change from positive to negative as well as those which, previously negative, become positive. In most cases a positive tuberculin reaction repeats as a positive for many years. In my own case I have been continuously positive to minimal doses of tuberculin since 1920. During these 17 years there has never been a sign or symptom of clinical tuberculosis. Such instances go to prove that an infection with tuberculosis of the type I harbor is not a very dangerous bedfellow.

What is the ratio of clinical cases of tuberculosis to positive reactors to tuberculin? The Lymanhurst group, to which we are indebted for much good work on tuberculosis, estimates that the frequency of clinical disease relative to the positive tuberculin tests increases with age. Thus they state that among young children who are tuberculin-positive only 1 in 2,000 or 3,000 will be found with developing reinfection or clinical type of tuberculous lesions. In the high school period only 1 of 500 to 800 reactors will be a clinical case, but in the twenties and thirties the number increases to 1 for every 100 to 200 positive tuberculin tests. Two points emerge from these facts. One is that for a group of students or workers the making of X-ray films of the chest is not warranted on a large scale basis. The other is that there seems to be less and less need for a vaccine against tuberculosis even if a good one could be prepared, which is not the case. In our population the amount of tuberculosis is decreasing not only as regards the clinical disease but as regards the preclinical infection which gives a positive tuberculin but possibly no other sign. With continued emphasis on anti-tuberculosis measures now advocated and with continued prosperity it should be possible to further reduce tuberculosis without recourse to much further attention to either vaccine or chemotherapy. In other words, the tuberculosis program seems to be on the right track.

I have pointed out that so far as the individual patient is concerned the tuberculin test is a procedure of far greater usefulness than most practitioners suppose. Of what value to community medicine is the widespread application in practice and clinics of tuberculin testing? For one thing, tuberculin tests demonstrate to what degree the race is tubercularized, and they offer a measuring rod whereby we may gauge the degree of success tuberculosis prevention measures have. Again, tuberculin tests serve to pick out the candidates for clinical tuberculosis. It is well established that in a good many young people who are tuberculin-positive clinical tuberculosis will develop later on.

Unfortunately it is no longer believed that all clinical tuberculosis in the adult is derived from a primary complex set up in childhood. Tuberculosis is increasingly looked upon as a contagious disease, for all ages, albeit not a fulminating one, and those hospitals which have placed tuberculosis on a proper precautionary basis have reported a lower incidence of tuberculosis among the attendant nurses. A medical student who has always been tuberculin-negative may become infected from his ward contacts. Contrary to early beliefs, the man or woman who marries a tuberculous spouse is more likely to develop tuberculosis than those of equal health who marry partners with no sign of clinical tuberculosis. Nevertheless, clinical tuberculosis does arise from persons who give a positive tuberculin test before they show clinical signs. Thus, frequent tuberculin tests will serve to outline the group from which the clinical cases will come. Correctly applied, particularly in institutions, such tests can do much to make the work of preventive and curative medicine more successful. It is unfortunate that the degree to which the test is positive does not appear to correlate with the degree of danger of tuberculosis to which the individual is subject. But certainly persons giving repeated positives and showing the slightest deviation from normal well-being should be given the benefit of X-ray and careful physical examinations.

Another point of great value in the tuberculosis control program is that each tuberculin-positive points out some person who has been exposed to a communicable case of tuberculosis. If we can guarantee the milk supply we come down to the fact that a case of tuberculosis must exist in the immediate environment of the one who showed the tuberculin-positive. It has been estimated that one patient with open tuberculosis may eliminate from thirty to forty million tubercle bacilli daily. Each such person should be known to the authorities and proper measures taken to prevent that elimination from acting as a source of infection. Each time a school child is found tuberculin-positive it points to some source of infection in that child's environment. In the past when it was thought that very large numbers of children were positive it was hardly possible to do much about it. Now that the percentage of positive reactors runs only as high as around 20 per cent, and will probably drop lower, it is possible for really valuable measures of prevention to be instituted based upon follow-up in the environment of each school child presenting a new tuberculin-positive.

Considerable emphasis has been placed in the past on the difference in clinical tuberculosis in the so-called "primitive" and "tubercularized" races. It may be pointed out that from the trend which I have brought out in this paper it appears that we are well on our way to becoming a primitive race as regards tuberculosis. We may ask whether such a prospect has in it any fear for the future? Be that as it may, the present status of the tuberculosis situation seems most encouraging. I feel that a proper appreciation of the usefulness of the tuberculin test will go far toward keeping that situation satisfactory.

THE MORBID ANATOMY OF BUNDLE-BRANCH BLOCK*†‡

REVIEW OF THE LITERATURE, REPORT OF SIXTEEN CASES WITH NECROPSY EXAMINATIONS, AND REPORT OF SIX CASES WITH DETAILED HISTOLOGIC STUDY OF THE CONDUCTION SYSTEM

(*Continued from January, 1938*)

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Summaries of Sixteen Cases of Bundle-branch Block Studied Pathologically

Before proceeding to a more detailed description of the 6 cases which constitute the main subject matter of this report it would be of some value briefly to review the clinical records and gross morbid anatomy of the 16 cases of bundle-branch block that have been studied, inasmuch as pathologic studies of such cases to be found in the literature are rare.

Case 1 (previously reported as Case 1 by Yater, Cornell and Claytor, 1936).[110]—A man, aged 65 years, had had dyspnea on exertion and spells of dizziness, faintness and unconsciousness for more than a year before death. Complete heart block was known to have existed for 3 months before death, which occurred in an Adams-Stokes attack. Electrocardiograms showed left axis deviation and did not suggest bundle-branch block, although the histologic lesions were confined to the bundle branches, the auriculoventricular node and bundle being uninvolved. The blood pressure was 160 systolic and 60 diastolic. The heart weighed 450 grams. The myocardium appeared to be normal. The anterior descending coronary artery was sclerotic, and about 3 cm. from its origin it was constricted to about one quarter of its normal caliber. The other coronary arteries were somewhat thickened, but their lumina were of normal diameter. The endocardium and valves appeared normal. The pathogenesis of the bilateral bundle-branch block was undoubtedly coronary arterial sclerosis.

Case 2 (previously reported as Case 2 by Yater, Cornell and Claytor, 1936).[110]—A man, aged 63 years, had had Adams-Stokes attacks for nearly 4 years. The blood pressure was 110 systolic and 60 diastolic. Electrocardiograms made at intervals during this period showed numerous changes in the ventricular complexes. Before 2 to 1 heart block was established the form was almost typically that of left bundle-branch block. After 2 to 1 heart block had become established the curves of bundle-branch block no longer existed. Finally complete heart block supervened, with the reappearance of left bundle-branch block. Death occurred during a prolonged convulsive seizure. The heart weighed 450 grams. The large coronary arteries were not atheromatous or thickened, and their lumina were normal. The chambers were normal in size and not dilated. The myocardium showed no evidence of fibrosis grossly. The endocardium and valves appeared to be entirely normal. The cause of the histologic lesions of the conduction system, which consisted of fibrosis confined to the bundle branches (the left much more than the right), was coronary arterial sclerosis involving the small arteries in the interventricular septum, which were considerably thickened and narrowed in places.

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‡ In two parts, of which this is part 2. Part 1 appeared in the January issue.

Case 3 (previously reported as Case 3 by Yater, Cornell and Claytor, 1936).[110]—A man, aged 49 years, had had some dyspnea on exertion and occasional dizzy spells for over a year before death. The blood pressure was 132 systolic and 88 diastolic. Thrombotic occlusion of the arteries of his right leg developed, and he died under the anesthetic before amputation could be performed. Numerous electrocardiograms made during the last year of life showed varying degrees of auriculoventricular heart block with some periods of sinus rhythm. In all of the electrocardiograms there was evidence of impaired conduction of one or the other bundle branch, more often of the left. The heart weighed 410 grams. The large coronary arteries appeared normal, with an occasional small, slightly elevated atheromatous plaque. The myocardium was flabby and grayish red. In the posterior wall of the left ventricle near the apex and close to the septum there was a small scar, 0.8 cm. in diameter, with fine yellow mottling. There was also suggestion of scarring in the interventricular septum near the base anteriorly. The endocardium and valves were apparently normal. The pathogenesis of the incomplete but severe fibrosis of the two bundle branches was again probably coronary arterial disease. The small intramyocardial arteries were surrounded by much more than the normal amount of fibrous connective tissue.

Case 4 (Case 1 of the present report, v. i.).
Case 5 (Case 2 of the present report, v. i.).
Case 6 (Case 3 of the present report, v. i.).
Case 7 (Case 4 of the present report, v. i.).
Case 8 (Case 5 of the present report, v. i.).
Case 9 (Case 6 of the present report, v. i.).

Case 10 (Army Medical Museum Accession No. 38706).—A man, aged 43 years, had been known to have heart trouble for a year before death, with weakness, dyspnea on exertion, and later progressive edema with orthopnea. His blood pressure was 106 systolic and 88 diastolic. An electrocardiogram showed left bundle-branch block without increase in amplitude of the ventricular complexes. The heart weighed 490 grams and was dilated. The anterior descending coronary artery was calcified with great reduction in the size of the lumen and a recent red thrombus. The left circumflex artery was similar, but the right coronary artery, although sclerotic, had a good lumen. A large infarct involved the apex of the left ventricle, and the interventricular septum was thinned and scarred. The latter was covered by a much thickened endocardium. A mural thrombus filled the apex of the left ventricle. The valves appeared normal. A histopathologic study of the conduction system has not been made.

Case 11 (Army Medical Museum Accession No. 40539).—A man, aged 55 years, began to have palpitation of the heart 5 years before he died, and was told he had a large heart. For 2 years before death he had had attacks of congestive heart failure. The heart was found to be very large and there was evidence of aortic regurgitation. The blood pressure was 164 systolic and 100 diastolic. Eight electrocardiograms made at intervals during the last 8 months showed left bundle-branch block with very little variation. The heart weighed 770 grams and was dilated. The hypertrophied myocardium was streaked with fibrous tissue. The aortic valve was thickened, with rolled free edges, and the anterior cusps were fused by a mass of calcium at the commissure. There was also extensive calcification at the line of attachment of the posterior cusp. The other valves were essentially normal. There was severe coronary arterial sclerosis, especially of the anterior interventricular artery which was nearly occluded by the sclerosis. Serial sections were made of the conduction system but were not satisfactory.

Case 12 (Army Medical Museum Accession No. 40621).—A man, aged 42 years, had a cardiac attack very suggestive of coronary arterial thrombosis 2 months before he died, which was the first indication of heart disease. The highest blood pressure was 145 systolic and 95 diastolic. Anginal attacks followed. Death occurred unexpectedly. An electrocardiogram showed "incomplete" left bundle-branch block. The heart weighed 600 grams. The anterior descending coronary artery was calcified and had a very small lumen which was filled with a recent thrombus. The right coronary artery was sclerotic but not occluded. There was a large healing infarct of the lower anterior wall and apical region of the left ventricle, and this area was covered by a large, flat mural thrombus. The valves appeared normal. A histopathologic study of the conduction system has not been made.

Case 13 (Army Medical Museum Accession No. 41621).—A man, aged 62 years, began to have attacks of dyspnea and precordial pain 3 months before he died. There was evidence of pulmonary congestion. The blood pressure was 95 systolic and 70 diastolic. Five different electrocardiograms were similar, showing left bundle-branch block without increased amplitude. The heart weighed 670 grams, but the much thickened, adherent pericardium probably accounted for 150 grams. The heart was considerably dilated. The coronary arteries were all very sclerotic and more or less completely calcified. The anterior and posterior interventricular arteries were occluded by the sclerosis in their distal halves. There was a large, partially healed infarct involving the lower and anterior half of the interventricular septum. This area was thin and bulged into the right ventricle; it was covered on the left ventricular surface by a friable, grayish-red, lamellated thrombus. The apical region and lower anterior wall of the left ventricle was involved in the infarction. The valves were essentially normal except for some atheromatosis of the aortic cusps and the aortic leaflet of the mitral valve. Serial sections were made of the conduction system but were not satisfactory.

Case 14 (Army Medical Museum Accession No 42974).—A negro, aged 48 years, had been dyspneic for 6 months and had had a cough with expectoration of blood. Paroxysmal nocturnal dyspnea had developed. The blood pressure was 150 systolic and 130 diastolic. An electrocardiogram showed left bundle-branch block with low amplitude in lead 1. The heart weighed 555 grams. There were scars in the interventricular septum, at the bases of the papillary muscles, and in the apical region of the left ventricle. The anterior descending artery showed moderate sclerosis but not much diminution in the caliber of the lumen; the other coronary arteries were only mildly sclerotic. Serial sections of the conduction system were made but were not satisfactory.

Case 15 (Army Medical Museum Accession No. 43235).—A man, aged 79 years, had had some dyspnea for 7 years and an electrocardiogram showed impaired A-V conduction at the beginning of that time. For about a year, 2 years before death the heart rate varied a great deal but was often slow, being often as low as 28. An electrocardiogram made 2 years before death showed 2 to 1 heart block, QRS interval of 0.14 sec., large R waves and large notched S waves in the three conventional leads, and upright T waves in these leads. One made a year before death showed complete heart block, the same QRS complex in lead 1, small notched R wave and large notched S wave in lead 2, no R wave but a deep slurred S wave in lead 3, large upright T waves in all 3 leads, occasional coupling of ventricular complexes, and frequent ventricular extrasystoles. One made a month before death showed sinus rhythm with PR interval of 0.22 sec. and typical left bundle-branch block with QRS interval of 0.14 sec. Death resulted from heart failure. The heart weighed 650 grams, with hypertrophy of both ventricles, especially the left. There was moderate sclerosis of the coronary arteries but no appreciable reduction in the caliber of their lumina. The aortic valve was calcified, and the right and left anterior cusps were fused. A spur of calcium extended downward a short distance from the right side of the calcified posterior cusp into the left ventricle in the interventricular septum. The other valves were essentially normal. There was no gross scarring of the myocardium. Serial sections of the conduction system were made but were not satisfactory.

Case 16 (previously reported by Yater and Shapiro).[157]—A woman, aged 21 years, had been told she had heart disease at the age of 7 years. There was a long, harsh systolic murmur which was loudest at the left sternal border. Electrocardiograms showed left axis deviation, variable direction of T waves in lead 1, and QRS interval of 0.16 sec. Death occurred unexpectedly during the night. The heart weighed 275 grams and was a typical example of Ebstein's disease or congenital displacement of the tricuspid valve down into the right ventricle. The right side of the heart was greatly enlarged but not hypertrophied. Serial sections of the conduction system did not show lesions, but the course of the right bundle branch was somewhat anomalous.

REPORT OF SIX CASES OF BUNDLE-BRANCH BLOCK WITH DETAILED HISTOPATHOLOGIC STUDY OF THE CONDUCTION SYSTEM (DETAILS OMITTED)

SUMMARY OF CASE 1

A man, aged 50 years, had presented evidence of heart disease for more than a year before his death, but the etiology thereof was not clear. Shortly before death the liver became engorged but there was little edema detectable otherwise. Electrocardiograms showed "right bundle-branch block" which was not complete, however, until just before death. General peritonitis the result of acute perforation of a chronic duodenal ulcer hastened death. The heart was moderately enlarged. The mitral valve showed healed valvulitis which had produced regurgitation but not much stenosis. The coronary arteries were all dilated and thin-walled. Six thousand four hundred and seventy serial sections of the conduction system showed some fibrosis of the auriculoventricular node and bundle. The left bundle branch contained definitely more than the normal amount of interstitial connective tissue throughout. The first portion of the right bundle branch was very fibrotic, and in a short part of its intramyocardial course it was completely destroyed by involvement in a dense peripheral myocardial scar. The remainder of the branch was relatively normal. The myocardium in general was somewhat fibrotic and contained a few small, definite scars.

Discussion of Case 1. The pathogenesis in this case was probably an ancient rheumatic arteritis which produced myocardial infarction in the region of the intramyocardial portion of the right bundle branch and destroyed a portion of it. The vascular disease had resulted in thinning and dilatation of the vessels. The only other plausible explanation would be that the myocardial changes resulted from rheumatic myocarditis, but the character of the lesions was much more suggestive of healed infarcts. The small scars were not large enough to greatly compromise the function of the myocardium. The arterial disease, however, had produced malnutrition of the left bundle branch and the endocardium with resulting moderate but extensive interstitial fibrosis of the branch. The fibrotic condition of the bundle of His was not severe enough to produce impairment of auriculoventricular conduction. The bundle-branch block was certainly of many years' standing, since the lesions all indicated great age, but there was no history of the time of onset of the rheumatic infection. The electrocardiogram did not show the large voltage originally described for bundle-branch block, but it fulfilled the original criteria in other respects. Speculation would be interesting but inconclusive in regard to the cause of the single QRS complex of normal form referred to.

SUMMARY OF CASE 2

A woman, aged 46 years, at the time of death, had had frequent attacks of rheumatic fever since the age of 8 years. For 9 years she had had symptoms suggestive of heart disease, and for more than 6 months there had been symptoms of severe congestive failure. Electrocardiograms made a few days before death showed "right bundle-branch block," auricular fibrillation, and extrasystoles. The heart showed severe mitral stenosis and moderate scarring of the aortic and tricuspid valves. There was a raised endocardial scar in the upper part of the left side of the interventricular septum. The myocardium showed microscopically patchy degeneration and healed rheumatic arteritis. Four thousand serial sections through the conduction system showed the auriculoventricular node and bundle only slightly degenerated, but there was practically complete replacement of the right bundle branch by hyaline fibrous tissue in part of its intramyocardial portion as it entered a scar in the peripheral part of the myocardium. The left bundle branch was not normal, particularly as it passed beneath the raised endocardial scar, but it was not interrupted in any portion. Many of its fibers were swollen and imbedded loosely in fibrous connective tissue.

Discussion of Case 2. The pathogenesis of the myocardial degeneration and the main lesions of the bundle branches was undoubtedly an old rheumatic arteritis, although the endocardial scar in the left ventricle which compromised the left branch was probably due to endocarditis. The arterial disease was extensive and affected only the small arteries and arterioles. Similar vascular lesions due to rheumatic infection have been described by Karsner and Bayless (1934),[164] by Gross, Kugel and Epstein (1935),[165] and others. There was no doubt as to the bundle branch more seriously affected. It is unbelievable that the right branch could conduct at all.

The case illustrates well the point that it is impossible usually from a gross examination of the heart to state which bundle branch is destroyed. The endocardial scar lying in the tract of the beginning of the left branch could readily have been considered adequate to cause destruction of that branch, but the extensive histologic study showed the branch probably to be capable of functioning, whereas the right branch, unassociated with any indictable gross lesion, was almost totally destroyed in part of its course. As in case 1 the amplitude of the ventricular complexes was not great.

SUMMARY OF CASE 3

A man, aged 24 years, had been told he had a cardiac murmur 5 years before he died. Less than 6 months before he died he had a short attack of syncope. A little more than a month before he died similar attacks recurred and became more and more frequent. Great variation in the pulse rate was noted, and the syncopal attacks occurred during periods of asystole. Electrocardiograms showed almost classical right bundle-branch block and many transitions from sinus rhythm to different degrees of partial heart block and asystole. They did not show any periods of idioventricular rhythm, however. Death occurred in an Adams-Stokes seizure. The heart was moderately enlarged; its chambers were hypertrophied, especially the left auricle and right ventricle, but they were not dilated. The valves and large coronary arteries appeared normal. The endocardium of all chambers showed a patchy whitening, which was most marked on the left side of the interventricular septum. Histologic study by means of 4,417 serial sections showed diffuse and extreme fibrous scarring of the myocardium, and thickening and fibrosis of the walls of the intramyocardial arteries, especially of the medial coat. The auriculoventricular node was slightly fibrotic, but the bundle of His was fibrotic to the extent of about 50 per cent of its substance in its distal half. The left bundle branch was represented by very few fibers lying beneath the thickened fibrous endocardium; these almost disappeared in the lower half of the septum. The right bundle branch became progressively more fibrotic and was completely replaced by dense fibrous tissue in its distal half.

Discussion of Case 3. The pathogenesis in this most remarkable case is not clear, but it seems probable that here again it was an old rheumatic arteritis and endocarditis. There was definite widespread arterial disease of a kind not due to ordinary arteriosclerosis. The absence of valvulitis, however, throws some doubt on the assumption of a rheumatic etiology. The hypertrophy of the chambers most affected in mitral valvulitis, namely, the left auricle and the right ventricle, is extraordinary, in view of the absence of mitral disease. However, the left ventricle and the interventricular septum were also hypertrophied. The case suggests that coronary arterial disease and myocardial disease are capable of producing cardiac hypertrophy.

The extensive destruction of both bundle branches was astounding, but although it was almost unbelieveable that the left bundle branch could conduct at all, which it did not do at times, there was no question as to the inability of the right branch to function.

SUMMARY OF CASE 4

A woman, aged 65 years, had had dyspnea for a year. A few days before death she developed severe upper sternal pain and rather rapidly passed into coma. The blood pressure, which had been moderately elevated, dropped progressively. There was orthopnea, some cyanosis, râles in the bases of the lung, and a little fever. The blood non-protein nitrogen was 180 mg. per 100 cc. of blood. The electrocardiogram showed prolongation of the PR interval, left axis deviation, and the T waves in all three leads in a direction opposite to the main ventricular complexes. There was not much spread in the QRS complexes and no notching. Necropsy revealed markedly secondarily contracted kidneys. The heart was moderately hypertrophied. The coronary arteries were not much degenerated, and the myocardium was normal for the patient's age. A study of 7,020 serial sections showed the auriculoventricular node and bundle were relatively normal, but a short portion of the first part of the right bundle branch was moderately fibrotic, and the left bundle branch showed extensive but variable interstitial fibrosis although the Purkinje fibers were well preserved.

Discussion of Case 4. This case was studied because of the incomplete picture of bundle-branch block. Some cardiologists would consider the electrocardiographic curves as those merely of left ventricular preponderance. However, the lesions of the bundle branches, and especially of the left, would allow one to suggest that there was some reduction in the conduction time through the branches and certainly more in the left than in the right. This relativity of involvement of the branches is important, since it must be rare for one branch alone to be diseased. Also, it does not seem to be necessary to assume that one or the other branch must be completely destroyed to produce distortion of the electrocardiographic curves.

The pathogenesis of the lesions of the conduction system in this case is not certain, but the etiology of chronic renal disease with hypertension is clear. Although there was no advanced degree of coronary arterial disease, it appears that the involvement of the bundle branches was the result of impaired nutrition.

It is fair to point out that the electrocardiogram was made shortly before death, a fact which constitutes a weakness in relating the electrocardiographic picture to the bundle-branch lesions.

The abortive offshoot of the left bundle branch observed in this case suggests the presence of communications directly into the myocardium from a bundle branch. This finding is reminiscent of the work of Cardwell and Abramson (1931),[153] Wahlin (1932),[154] and later of Abramson and Margolin (1936)[166] in connection with animal hearts, but it is not very conclusive. I have never seen unequivocal communications in the human heart either of the variety found in animal hearts nor of the kind described by Mahaim in the human heart (v.s.), although I am willing to believe that minute communications do exist from one side of the septum to the other.

SUMMARY OF CASE 5

A man, aged 53 years, was known to have had heart disease for 4 years and died of congestive heart failure. An electrocardiogram 10 months before death showed ventricular tachycardia, following the cessation of which an electrocardiogram showed left axis deviation with inverted T waves in lead 1 and QRS intervals of 0.12 sec. Another made shortly before death showed low voltage and QRS intervals of 0.16 sec. The heart weighed 550 grams, and all chambers were dilated. There was advanced coronary artery sclerosis with an old thrombus in the anterior interventricular artery and a fresh one in the left circumflex artery. An old infarct in the apical region of the left ventricle and the lower anterior portion of the interventricular septum had caused marked thinning of these portions. A study of 4,240 serial sections of the conduction system showed that the auriculoventricular node and bundle were moderately fibrotic and partly replaced by fatty connective tissue. The right bundle branch showed very moderate fibrosis down to the middle of its intramyocardial portion, in which for a short distance fibrous tissue replaced about 50 per cent of its fibers. Beyond this point it was fairly normal. The left bundle branch was seriously degenerated by dense fibrous tissue in the subendocardial layer, especially in its upper half. In its lower half the anterior division had completely disappeared in the scar of the old infarct; whereas the posterior division, although still compromised by fibrosis, was not as much diseased as it was in its upper half.

Discussion of Case 5. The electrocardiographic pattern in this case, i.e., the one made several months before death following an attack of ventricular tachycardia, was merely an advanced stage of that of the preceding case. Although both bundle branches were diseased there was no question as to the one more seriously affected. The left branch, while not completely destroyed at any one level, was so extensively degenerated throughout that, compared to the right branch, the impulses passing through it must have been greatly retarded. Consequently, one is justified in assuming that the degeneration of the left branch played an important rôle in determining the electrocardiographic pattern.

The pathogenesis in this case is clear-cut, being advanced coronary arterial disease and old myocardial infarction. The electrocardiographic curves in this case are so frequently observed with cases in which the gross morbid anatomy is very similar that one may be pardoned for concluding that in most of such cases there is considerable degeneration of the left bundle branch.

SUMMARY OF CASE 6

A negro, aged 40 years, had dyspnea for 2 years before he died. Edema had appeared about 6 months after the onset of dyspnea. The blood pressure at first was moderately elevated but subsequently was normal. The heart was considerably enlarged. Manifestations of congestive heart failure gradually increased, and terminally there was evidence of renal insufficiency with occlusion of the femoral arteries and gangrene of the feet. Three electrocardiograms made at intervals during the 2 years before death showed evidence of left bundle-branch block. One made 2 weeks before death showed auricular fibrillation and low voltage. The heart was found to be hypertrophied and dilated, especially the left ventricle, which contained a mural thrombus in its apex. The coronary arteries were only very moderately sclerosed and contained only agonal thrombi. Histopathologic study by means of 3,900 serial sections revealed small scars in the myocardium. The arteries were not very sclerotic except in the auricles near the central fibrous body. The auriculoventricular node and bundle were moderately fibrotic. The right bundle branch except at its origin, where it was moderately fibrotic, appeared practically normal. The left bundle branch was moderately degenerated but apparently not greatly compromised; much of it was imbedded in fibrous tissue, and its fibers were more than normally vacuolated.

Discussion of Case 6. I was greatly surprised in this case to find such comparatively little damage to the left bundle branch. It was, however, much more degenerated than the right branch, which was only slightly altered. Had there been a larger scar in the septum one might have concluded that the original electrocardiographic curves were the temporary result of coronary occlusion with infarction of the myocardium. One would certainly expect more severe degeneration of the left branch in this case than in the preceding two cases from a comparison of the electrocardiograms. If one assumes to begin with that the electrocardiogram indicates impairment of bundle-branch function in this case, then it is plausible to further assume that there may be greater impairment of function of a branch than is evident histologically.

GENERAL DISCUSSION OF CASES STUDIED HISTOPATHOLOGICALLY

Certain points in connection with the 6 cases studied histopathologically stand out clearly. In all there was definite organic disease of the bundle branches, although it was least marked in Case 6, in which one would have expected more involvement than was found. Both branches were affected in each case, but it was possible always to state which of the two branches was more seriously affected. The lesion was fibrosis in all of the cases. In 4 of the cases (2, 3, 4 and 6) the lesions of the branches appeared to be independent of adjacent lesions in the myocardium, although there were also myocardial lesions of importance in two of these (Cases 2 and 3), undoubtedly of similar pathogenesis. In Cases 1 and 5 the main involvement of the branches was clearly due to their position in regions of myocardial disease. In most of the cases it seems proper to attribute the pathogenesis of the bundle-branch and myocardial disease to coronary arterial disease. At this point it may be well to state that many hearts not showing bundle-branch disease have been studied histologically as controls, so that the findings in most if not all of these 6 cases are probably of significance in the production of certain at least of the electrocardiographic abnormalities.

Cases 1, 2 and 3 possess great significance in that the electrocardiographic curves called right bundle-branch block by the American school were associated with complete destruction of part of the right bundle branch, although there was also severe involvement of the left branch. In Cases 1 and 2 the lesions were definitely of rheumatic origin, and in Case 3 such etiology would also seem very probable. I believe the lesions affecting the bundle branches and the myocardium in all three cases were due to rheumatic arteritis, certainly in Cases 2 and 3. The valvulitis in Cases 1 and 2 probably had nothing to do with the bundle-branch disease, and in Case 3 there was no evidence of valvulitis.

In Cases 4, 5 and 6 it would appear that the lesions in the left bundle branch were the more important in the production of certain at least of the electrocardiographic abnormalities. These abnormalities would be designated by the American school as evidence of intraventricular conduction disturbance of the left bundle-branch type. The three cases were examples of so-called degenerative cardiovascular-renal disease. In Cases 4 and 6 the degree of coronary arterial disease was not great, but in Case 5 it was extreme, and the bundle-branch lesions were due very definitely to this. In all three cases the brunt of the cardiac strain was borne by the left ventricle. In Case 4 the slight increase in intraventricular conduction time appeared to be due to extensive fibrosis compromising but not destroying the left bundle branch. This is therefore a case of incomplete left bundle-branch block. In Case 5 there appeared to be much greater destruction of the left branch, but one could not state with certainty that the branch was completely incapable of functioning. In Case 6, in which a complete lesion was anticipated, the lesions found did not appear sufficient to cause complete interruption of the passage of impulses through the branch. One might conclude with caution, therefore, that cases of complete cross-sectional destruction of the left bundle branch may be rare, but that partial lesions compromising the function of the branch may be common and produce electrocardiographic alterations of the left bundle-branch type.

In only 1 of these 6 cases (Case 5) was it possible to state that there was complete destruction of the anterior division of the left bundle branch, as has been said to be so common by Mahaim. Even in this case there was also great involvement of the posterior division.

This was the only case with severe sclerosis and occlusion of the large coronary arteries, and of these the anterior descending branch was the most affected. In this case there was also considerable fibrosis of a portion of the right bundle branch, a point well explained by the vascular supply of the branches.

One might attempt to explain why the right bundle branch was the more seriously damaged in the rheumatic cases and the left bundle branch in the cardiovascular-renal cases. Perhaps the arteritis of rheumatic etiology, involving more prominently the intramyocardial arteries than the large subepicardial ones, more often affects the entire thickness of the interventricular septum and would be more apt to completely destroy the right bundle branch in its intramyocardial portion than it would the subendocardial portion, i.e., the main portion, of the extensive left branch. In the cardiovascular-renal cases, which include coronary arterial disease or arterial hypertension or both, the brunt of the strain, either vascular or hypertensive, is borne by the left ventricle, and therefore it is fair to assume that the nutrition of the left bundle branch would be more apt to suffer more severely than that of the right branch.

From a study of these 6 cases it would appear that amplitude of ventricular complexes is not entirely dependent upon the state of the bundle branches in clinical cases.

Coördination of Data on Bundle-branch Block

A careful weighing of the experimental data on bundle-branch block shows more points in favor of the newer terminology for electrocardiographic curves. The difference between the newer American and the older European concept, which involves mainly a reversal of terminology, is explicable on the basis largely of anatomical differences between man and the dog.

A review of the literature on bundle-branch block reveals much confusion as to which electrocardiographic curves can properly be designated those of bundle-branch block and as to which bundle branch is affected. Although the classical curves of bundle-branch block are accepted by all, there are many atypical curves of unexplained origin. The pathologist has not kept pace with the electrocardiologist even in connection with the classical curves.

A consideration of the large number of published reviews of series of clinical cases of bundle-branch block leads to the following conclusions. Bundle-branch block is not uncommon. It occurs much more commonly in middle age and early old age. It is much more common in men than in women. It is often but by no means always associated with definite clinical or physical evidence of heart disease. The left bundle-branch type of block is much more common than the right, but the right branch type is not as uncommon as was originally thought. Cases of transient, intermittent or "functional" bundle-branch block are not uncommon. They usually indicate organic heart disease and would probably be more frequently observed if electrocardiograms were made more frequently in individual cases. A progressive change from normal curves to those of bundle-branch block might also be observed more often if this were done. Sudden onset of permanent bundle-branch block is rarely noted. The association of various degrees of auriculoventricular block with bundle-branch block is not uncommon, and auricular fibrillation may also occur in association with it. Premature contractions are, of course, fairly common accompaniments. The prognosis is grave, but many patients have lived for several years after discovery of the condition.

The question as to where ventricular preponderance curves end and intraventricular block curves begin is not settled, but it is probable that any increase in the QRS interval over 0.10 sec. is an indication of disease of one or both bundle branches. Ventricular strain may be important in many cases in determining the direction of the main ventricular complexes and the T waves, particularly in leads 1 and 3. The effect of position of the heart upon the form of the electrocardiographic curves should rarely be sufficient to cause much confusion in interpreting the curves.

The pathogenesis of bundle-branch block is almost always coronary arterial disease, rheumatic or degenerative, or hypertension, as indicated by a review of the literature and the 16 cases reported in this article.

The histogenesis of bundle-branch block is mainly fibrosis due to coronary arterial disease or to subendocardial thickening due partly to stretching and strain from hypertension, but the studies performed have been confusing, largely in regard to which bundle branch was more severely affected. I shall not attempt to explain the discrepancies of various authors. Of these, Mahaim[133] has done the most careful and nearly complete work. The fact that his conclusions uphold in the main the old terminology may be more a matter of interpretation of the lesions than of faulty technic.

The vascularization of the conduction system explains well why it is rare for one bundle branch alone to be affected.

The histopathologic study of the six cases reported in this article shows that (1) bundle-branch lesions are probably almost always bilateral; (2) the pathogenesis is mainly coronary arterial disease or strain resulting from hypertension; (3) the morbid anatomy is fibrosis; (4) the new terminology of bundle-branch block is more nearly correct for man than the old one, although the designation "right" or "left" must be admitted to apply only to the branch more seriously damaged; (5) "right" bundle-branch block is probably usually due to rheumatic arteritis or myocarditis, and "left" bundle-branch block is usually due to so-called degenerative cardiovascular-renal disease; (6) a bundle branch need not be entirely destroyed at any level to retard the rate of conduction of the impulse through it; (7) the form of the electrocardiographic curves depends at least partly upon the relativity of the degree of damage of the two branches, and the extent and severity of involvement of the more diseased branch; and (8) increased amplitude is not necessary for the diagnosis of bundle-branch block.

There remain many questions yet unanswered in regard to bundle-branch block: the pathogeneses of the various types of bundle-branch block or intraventricular block curves; the importance and effect of the location of the damaged region of the branch or branches; the alteration of the branch-block curves by the extent and severity of the myocardial disease, the degree of heart failure, and the relative weights of the ventricles; the form of the ST component of the electrocardiogram; the reason for the direction of the complexes in lead 2; and many others.

SUMMARY AND CONCLUSIONS

1. A review of the essential literature concerning bundle-branch block has been made.

2. Sixteen cases of bundle-branch block with necropsy findings have been reported.

3. Six cases of bundle-branch block studied by means of serial sections through the conduction system have been reported.

4. Bundle-branch block is usually due to coronary arterial disease, either rheumatic or degenerative, or to hypertension resulting in left ventricular strain and impaired nutrition of the endocardium and bundle branch.

5. Bundle-branch block is usually associated with bilateral bundle-branch lesions, although one branch is usually more seriously affected than the other and probably usually determines the essential form of the electrocardiographic curves.

6. The newer or American terminology is more nearly correct for bundle-branch block in man, although it must be admitted that whether "right" or "left" is used to modify the diagnosis of this conduction disturbance, the adjective merely indicates the branch more seriously affected.

7. The uncommon form of bundle-branch block, "right" bundle-branch block, is probably usually due to rheumatic arteritis or rheumatic myocarditis.

8. The common form of bundle-branch block, "left" bundle-branch block, is probably usually due to degenerative cardiovascular-renal disease,

meaning coronary arterial sclerosis or arterial hypertension or both.

9. A bundle branch need not be entirely destroyed at any level in order to produce electrocardiographic alterations that may be designated "bundle-branch" block.

10. Increased amplitude of ventricular complexes is not essential to the electrocardiographic diagnosis of bundle-branch block.

11. Any increase of the QRS interval beyond 0.10 sec. may indicate lesions of the bundle branches.

12. Many questions remain unanswered in regard to bundle-branch block, and many careful histopathologic studies must be made before most of these questions can be answered.

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MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA INFORMS THE PUBLIC

On Sunday afternoon, January 23, 1938, in the Society's auditorium, there were foregathered outstanding representatives of Washington citizenry to the number of approximately 500. Drs. Arthur C. Christie and Wallace M. Yater read papers which we print in full. Of special interest were the questions submitted by individuals in the audience with the responses given. Noteworthy in the forum were the remarks by Dr. Prentiss Willson, also the response by Dr. Henry C. Macatee to the interrogation, "Why could not physicians give just as good medical care if they were paid a salary as they can under the old fee system?"

Dr. Thomas E. Neill, President, introduced the speakers. Dr. Arthur C. Christie presided at the forum.* The Medical Society and the profession generally, certainly insofar as the local press has been concerned, have been quite inarticulate. The full-time press representatives and the advocates of the H. O. L. C. Group Health Association, Incorporated, who have come in from other communities, have seemed to have had the ear of the public. The opportunity to meet a cross-section of the public was welcomed, and was well received both by the laymen and the profession. The large number of letters from individuals prominent in the Nation's affairs are of particular assistance in determining the effectiveness of the presentation. Station WOL of the Mutual Chain broadcasted the proceedings from 3 to 4 P.M.

CONSTRUCTIVE PLANNING FOR MEDICAL CARE

A. C. CHRISTIE, M.D.

In 1927 the Committee on the Costs of Medical Care was organized and for 5 years carried out the most extensive investigation that has ever been made upon the way in which the American people receive their medical care. A million dollars was spent in this investigation and the findings were published in 28 volumes. The final volume, published in 1932, contained the Committee's recommendations. Ever since that time there has been almost continuous discussion centered around the recommendation of the Committee for the adoption of health insurance.

It is now apparent to many that the discussion has been conducted upon lines which are far too narrow to lead to anything constructive. The easy assumption that health insurance is the solution of the economic problems of those who need medical care has led to a campaign for its adoption which has occupied the front of the stage for several years and has completely obscured the main issues. What is needed is a comprehensive view of the entire problem of medical care in all of its various relations if we are to continue on the road of progress instead of following some of our European cousins down a blind alley.

A broad view of the subject reveals at once the fact that the problems of medical care are bound up with many of the other great social problems of the day. It is unnecessary to point out the close relationship existing between inadequate food and shelter on the one hand and disease on the other. Poverty and disease always go together.

Not only is it true that problems of public health and medical care are closely related to the general economic situation of the people, but within the field of the prevention and care of disease there is an essential interrelationship which gives to every aspect of the problem a social interest. We are dealing with problems which have the widest social ramifications, which involve not only the middle income group whose members can afford to insure themselves, but also the indigent and the poor. When we offer a solution for the problems of any particular group we must be sure that it will not bring harm to some other group nor interfere with the steady progress of medical science, and thus bring harm to all.

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* Dr. F. X. McGovern, Chairman, Committee on Arrangements.

A proper approach to the problem of planning for medical care requires, besides a broad view of economic and social relationships, a clear historical perspective, especially covering the past 50 years. Fragmentary plans for changes in present methods of medical care are often put forward in complete or partial ignorance of advances that have already been made or of past failure of methods now proposed. The assumption is common among those who are offering new plans of medical care that there has been little progress under our present system and that the inadequacies are much greater than is actually the fact.

It would require volumes to describe the advances that have been made in the prevention and cure of disease during the past 50 years. The story would include the discovery of antitoxin with its prevention and cure of diphtheria; the successful battle against typhoid fever and tuberculosis; the triumphs of modern surgery; the discovery of the X-rays and radium and their application to the diagnosis and treatment of disease; the raising of the average of human life from 45 to 59 years; the discovery of insulin and successful treatment of diabetes; the cure of pernicious anemia by use of liver extract; and many other triumphs down to the very present when the deadly streptococcus is finding its master in sulfanilamide.

Advances in medical education have kept pace with progress in the scientific field. At the beginning of the century there were 166 medical schools in the United States, the majority of them poorly equipped and manned. The medical profession, led by the American Medical Association, has brought about a reduction in the number of schools to 67 and such an improvement in standards that the graduates of today are among the best equipped men in the world for the practice of medicine.

Against the evils of patent medicines and quackery, the American Medical Association has waged a continuous battle for more than 30 years and offers today through its Council on Pharmacy and Chemistry a means of protection to the people which is a notable public service.

The outstanding service, however, which the medical profession has rendered under the present system of private practice has been the constant medical care given to every class of the population, through all of the economic and social changes of our modern industrial era. If the profession were given to slogans, nothing would better express its conception of its responsibilities than the phrase "medical care for *all* the people *all* the time."

No one realizes better than members of the medical profession that there are problems to be solved. They are due largely to the rapid progress of medicine and to radical changes in social organization. One of these problems is the lack of medical care in sparsely settled rural districts. This is almost entirely an economic problem and no solution can be offered except that of state and federal subsidies to support medical service in such areas.

Another problem is that of applying medical knowledge to the prevention of disease. It involves the entire field of public health and the proper coördination of that field with the private practice of medicine. Very briefly and generally the opinion of the medical profession on this subject is as follows: The community or state-supported public health department must carry on all those public services which insure a pure food and water supply, the prevention and quarantine of contagious disease, the hospital care of the indigent sick and the institutional care of the tuberculous and the insane. Such services must be expanded as time passes in order to adapt new medical discoveries to the needs of society. This will necessitate constant adjustments between the private practice of medicine on the one hand and the public health services on the other, as it becomes apparent that one or the other, or both together, can best cope with specific problems as they arise. Greater emphasis is being placed constantly upon the broadening of the private physician's education in preventive measures. No public official can ever apply such measures so well as the private physician who has intimate contact with individuals and families throughout their entire lives. It should be mentioned here that health insurance plans have no value as means for the prevention of disease or improvement of the public health. I shall refer to this a little later.

The next important problem is one which has always been present but which has become more acute in our modern industrial civilization; namely, the medical care of the poor and the indigent. It has long been a tradition of the medical profession that every person, man, woman, and child, regardless of economic or social condition, must receive medical care when he is sick or injured. In accordance with this tradition, the doctor has always given free medical care not only to the indigent who are dependent for their total support upon the community, but to the poor who have only a bare subsistence wage to support themselves and their families. Modern society provides no other means for the medical care of the poor. This is a problem which deserves careful study to the end that ultimately the entire community may assume at least part of the burden which is now borne by the medical profession alone. Again, it should be understood that no form of health insurance offers any solution for this problem. Indeed it may only aggravate it.

The problem which has caused more discussion than any other in the medical field for the past decade is the medical care of people of moderate income. This is the class which forms the great majority of our population, and the class upon which depends the support of medical care, not only for its own members, but for the other groups which cannot afford to pay for their own support. They constitute the majority of the responsible, independent people of the nation who want to pay their own way and who ask charity from no one.

Numerous studies have shown that about 80 per cent of the illnesses to which people are subject are of minor economic importance, the expense of which every one of moderate income can take care of without help. There are, however, about 20 per cent of illnesses which are of high cost and often quite beyond the means of the individual who must bear them. Such illnesses are unpredictable and it is, therefore, impossible to budget for them. That insurance of some kind is the solution for such a situation seems inescapable. Since the individual cannot meet these unpredictable costs of illness, they must, by some means, be spread over the group to which he belongs.

This is the situation which has given rise to the many types of health insurance which have come into existence in all civilized countries during the past 50 years or more. Experience has now proven that some types of insurance are sound and desirable while others are unsound economically and harmful from both the medical and social standpoints.

No objection can be raised to the usual type of health and accident policy offered by a reliable insurance company. The difficulties, however, of maintaining health insurance upon a sound basis are well illustrated by this type of policy. The premiums are high and an age limit of 60 years is required, but in spite of these limitations all insurance companies now refuse to write a noncancellable health and accident policy. Such policies offer only very limited help in the problem before us.

A form of insurance which has now become popular in many communities is that which provides for hospital care through group hospitalization. It is a sound and desirable type of insurance and has the approval of the medical profession for reasons which I will mention later.

A third type of insurance which has received only very limited trial but which seems to offer real possibilities is now the subject of study by committees of the New York State Medical Society and of the Medical Society of the District of Columbia. It has been in successful operation on a small and limited scale in Brattleboro, Vermont, for the past 13 years. Its trial on a larger scale has been recommended by physicians here and there for the past 3 or 4 years as a method to protect against high-cost illnesses. It is known as the "Medical Expense Indemnity" plan and is essentially as follows: A group or groups of employed persons establishes a fund through periodic payments by the individuals comprising the group. The fund is controlled by a non-profit corporation through a board of directors. The corporation contracts with each individual of the group to pay his medical bills within certain limits stated in the contract. The contract provides that the patient shall choose his own physician and in no way attempts to prescribe or limit the service of the physician. The only functions of the corporation are to collect the premiums, to act as custodian for the fund, and to pay the bills presented by the physicians for services rendered within the limits agreed upon.

As I stated above, this plan is under study and it would seem to deserve the attention of those who are sincerely interested in solving the difficult problems of medical care for the medium income group. It is quite likely that its details can be worked out and that all of those evils which are inherent in the usual health insurance plan could be avoided.

Why does the medical profession look with approval upon a group plan for hospitalization while it completely disapproves the usual health insurance plan? It is only necessary to contrast them to see the essential difference between them. Group hospitalization is a plan in which a non-profit corporation contracts with individuals in employed groups, upon the monthly payment of a certain sum, to give to the individual a certain limited number of days' hospitalization in a given year,—the kind of hospital accommodations to which he is entitled being definitely specified. The non-profit corporation at the same time contracts with each hospital of the community to pay a certain specified sum per day for definitely specified accommodations and services.

The important provision in this arrangement which makes it sound economically and socially is the definite and specified limitation upon the benefits to be given. So long as the limitations are respected the plan is sound and workable. The same may be said with regard to the "Medical Expense Indemnity Plan" which I mentioned before.

Contrast with this the usual health insurance plan in which a non-profit corporation agrees to give to an individual for a certain specified monthly payment, medical care which is unlimited as to quantity and impossible of specification as to quality. It is this inherent impossibility to place limitations upon the amount and kind of service to be rendered which makes such plans unsound financially and which gives rise to many of the evils growing out of them.

Seventy-five years of European experience prove that the so-called "group health association" and voluntary health insurance plans by whatever other name they may be called, always fail. They remain solvent during the early period when membership is increasing but when the membership becomes stabilized, financial difficulties begin. They then resort to various expedients such as increase in premium rates, decrease in the amount and kinds of service rendered and finally decrease in the salaries paid to the employed physicians and other employees, with consequent decrease in the quality of service rendered. When failure is imminent, or has overtaken a number of the voluntary groups, compulsory laws are passed and a large block of the population is compelled to participate in the plan.

The important thing to remember is that voluntary insurance plans are simply a step on the road to compulsory health insurance. By organizing such plans in this country we are repeating Europe's mistakes.

The voluntary insurance plans called "group health associations," which are now springing up in this city are repeating the old and discredited promises which were used for political effect in various countries of Europe when such plans were launched there many years ago. Again we are being told that they will so improve the health of their subscribers, especially through periodic examinations, as to reduce mortality and sickness rates among them. It can be predicted with the utmost confidence that the death rate will remain unaffected and that the days lost from sickness will be approximately twice as great among the insured group as in a comparable group of uninsured persons. These are facts so definitely proven by German and English experience that no one disputes them. The number of days' sickness per person in Germany is three times as great and in England twice as great as it was before insurance went into effect. The contrast between Germany and England on the one hand where they have insurance and the United States where we do not have it is striking in respect to the sickness rate. In Germany it is 17 days per person per year, in England 12 days, and in the United States 6 days.

I have referred early in this address to the effect of health insurance plans upon the problem of the care of the indigent in any given community. I mention it here again because it is the fashion at present to point to these insurance groups as valuable social experiments. In the light of European experience no such experiments are necessary, but there is one quite unsocial aspect of their operation which has not been sufficiently emphasized. They are of necessity confined to employed groups; when a person loses his job he loses his insurance. If he is then without funds both he and his dependents must be taken care of by one of the physicians of the community who has had no participation in the group health association, and who, year in and year out, takes care of his patients when they are out of employment just as he does in their years of prosperity. In other words the so-called "health association" furnishes care while the patient has funds but turns him over to the physicians of the community when he is out of employment. Instead of being valuable social experiments such plans serve to dislocate and disrupt the total medical service to the community, and are anti-social in their final results.

This brings us then to the point which, experience shows, is always reached by those who embark upon the way of voluntary health insurance, that is, to compulsory insurance under state control. This is the system which has been adopted in most European countries following long experimentation with voluntary plans. Within the past 2 years bills have been introduced into most of our state legislatures providing for compulsory insurance in this country, and there has been widespread propaganda to influence public opinion in favor of such a system. It is, therefore, important that people should have a thorough understanding of what is proposed.

Compulsory health insurance is not really "insurance" in the common acceptance of the term. It differs not only in the element of compulsion which is present but in the source of the funds for its operation. It was discovered at once when voluntary plans were superseded by the compulsory system in Europe that the premiums paid by the beneficiaries were not sufficient to finance the operations. The law, therefore, required that the employer of the person insured should pay into the fund each month a certain percentage of his total pay-roll. When this was found still to be insufficient the government paid a subsidy to the fund sufficient to cover its deficit. The so-called model laws presented before the state legislatures in this country during the past 2 years recognize this as the minimum requirement; they provide for a wage-tax, a pay-roll tax and a government subsidy.

It ought to be clearly understood by every employee who is looking favorably toward compulsory health insurance that he will be left no choice of action when such laws are once passed. His premium will be deducted each month from his pay and transmitted by his employer to the government agency set up to administer the system. Neither will the employer be left any choice; he must send in the required percentage of his pay-roll in addition to those percentages already required for unemployment insurance and old-age pensions. Nor finally will there be any choice on the part of employee and employer alike when a tax is imposed directly or indirectly to furnish to the government the funds for the subsidy which it must contribute to the plan to keep it solvent.

Compulsory insurance, for its operation, requires a large and complex administrative staff. In Germany about 34,000 persons are required simply to administer the compulsory insurance system, a larger number than there are doctors to care for the insured. To administer such a system in 48 states and the District of Columbia in addition to a large federal organization for government employees is a staggering conception. Not only would the administrative overhead add tremendous costs to the present cost of medical care but in such a country as ours political control and manipulation would be unavoidable. The end result would be a vast tax system imposed upon a special group of the population, and a bureaucracy under federal and state governments exercising a high degree of control over both physician and patient. All of this in order that a certain class of the population may secure medical care of a mediocre quality while the vital problems of prevention of disease and care of the indigent sick are left untouched and unsolved.

The medical profession must adjust itself to whatever social system the people of this country finally adopt but it would be derelict in its duty if it should fail to point out the dangers and evils which are plainly apparent in the tendency to follow Europe into a system of compulsory insurance with its unavoidable state control. Such a system is plainly at variance with the liberal ideals of the democratic state.

The medical profession is almost unanimous in its conviction that the present system of medicine has shown such phenomenal progress, and has continuously furnished medical care of such a high grade to every class of the population that no radical change should be contemplated. It further believes that all necessary adjustments can be made in the present system to assure continued progress in public health and prevention of disease; that all necessary changes can be made within the present system to assure adequate care to the indigent and the poor; and, finally that the medical-economic problems of the great middle class can be satisfactorily adjusted with the assistance only of types of insurance that are sound and practical.

CONSTRUCTIVE PLANS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA TO PROVIDE ADEQUATE MEDICAL CARE FOR ALL

Wallace M. Yater, M.D.

Dr. Christie has addressed you as a recognized authority on the subject of medical socio-economics. I address you mainly as a medical educator and as one who knows through intimate contact the men physicians are made of and what people are like when they become ill.

Any discussion of the subject of medical socio-economics should resolve itself around the question: What is best for the people as a whole? Subsidiary questions that must be answered are: (1) What is the proper modus operandi for preventing the spread of communicable diseases? (2) How best and by whom shall the indigent sick be cared for? (3) What is the best method of medical practice that will provide adequate medical care for the great mass of low wage-earners? and (4) What system of medical care will assure continuation of the present rate of progress of the so-called medical sciences?

It is admitted by all that federal, state, county and local health departments are proper and essential units for best dealing with the prevention of the spread of communicable diseases, but it must also be admitted that the efforts of such governmental departments will not accomplish their purpose without the coöperation of all of the physicians of every community. In other words, every practicing physician must be a volunteer health officer. Time will not permit elaboration of this point, but it may be safely stated that the great majority of physicians engaged in the private practice of medicine are cheerfully coöperating with the health officers of their political (governmental) unit in the war against the spread of communicable diseases.

It is also admitted by all that the indigent sick are proper wards of the state, that any sick individual who can not through his own resources secure shelter, sustenance and medical attention shall receive them at the expense of the taxpayers of the political (governmental) unit of which he is a member. Although this principle is followed in every section of our country, nevertheless a great part of the medical services rendered the indigent sick is donated ungrudgingly by private practitioners of medicine. It has been estimated that approximately one million dollars' worth of medical services is being rendered in this country gratuitously each day of the year by private physicians, and this figure does not include the work performed for private patients without remuneration. In the District of Columbia alone it is probable that private physicians are rendering annually three million dollars' worth of medical services to individuals whose medical services should theoretically be supplied by the District government. While physicians, who are subject to the same rate of taxation as other members of society, are thus bearing an unjust burden and saving a not inconsiderable sum for the taxpayers, they are willing to continue to do this if it is the price they must pay to preserve the standards of practice and the traditions of the profession. The most cherished tradition of the profession may be stated again in the slogan "Medical care for all the people all the time."

With these few remarks to emphasize some of the things Dr. Christie has discussed I turn now to the question: What is the best method of medical practice that will provide adequate medical care for the great mass of low wage-earners? First, I shall attempt to answer briefly another question, namely, why is the medical profession opposed to such compulsory sickness or "health" insurance plans as are being used in many other countries? The public has been made to believe that it is because it will reduce the incomes of the majority of physicians. If that were the main reason, and if it were true that such insurance systems provided better medical care for the majority of the people, then the medical profession could justly be indicted for criminal malpractice. However, this is not the main reason for the position of the American medical profession. While it is true that some of the people in insurance countries are getting benefits they did not receive before the advent of sickness insurance, the American medical profession believes that the quality of medical service for the great majority of the people in these countries has suffered, at least insofar as it has not kept pace with the standard of quality in the United States. The morbidity of the working class, i.e., the number of days lost annually from work because of sickness, has trebled in Germany in the 50 some years during which sickness insurance has existed, and in Great Britain it has doubled in the 20 some years of enforcement of its so-called health insurance. Dr. Christie has touched upon the economic factors involved in this increase in morbidity. The psychologic factors are even more important. It is only natural that physicians, who, after all, are only human beings, should not be so interested in insurance patients, whom they are compelled to treat for a predetermined and usually inconsiderable fee, as they are in patients whom they must satisfy and in whose graces they must remain in order to retain them as clients under our competitive system of practice. Compulsion never brings out the best qualities of people. On the other hand, the insurance patient does not trust the insurance physician as he does a private physician, since he senses his lack of interest; and he comes to look upon him as a rather poorly paid employee who is treating him only because he has to. Under our own system of practice it is a matter of justifiable pride for a physician to have a good practice, even though many of his patients are able to pay him little or nothing for his services. With the insurance physicians numbers are important only because they mean a little more revenue. In Germany the distrust between patient and physician is deplorable, and a most unbelievable situation has developed in that a large part of the private medical work is no longer done by physicians but by a sort of semi-quacks called Heilkundigen who are not graduates of medicine. The close personal relationship between physician and patient that constitutes such as important part in the recovery of the patient from his illness has been lost. As an indication of what insurance medicine brings I shall recount a short story. Sometime ago I spent an evening with a high-ranking official of the British Medical Association, who was lauding the British panel system, largely, I assume, because the British system of health insurance is the only one still under the control of physicians, and I attempted to secure from him some idea of the quality of medical service dispensed by panel physicians. After many questions, he finally parried with the comment "You American doctors spend too much time with your patients." I then asked, point-blank, "How many patients on the average does your panel physician see in a two-hour office period?" He replied without hesitation, "Twenty-eight." In other words approximately four minutes is devoted to each patient. That kind of medical service, you must agree, is worse than no medical service at all; thoroughness and not infrequently repeated observation are vital in detecting many diseases in their incipient stages. And because of such superficial handling of patients, the British have become the largest consumers of medicine in the world. Not only does the esprit de corps of the medical profession suffer under insurance medicine, but the confidential nature of patients' records is no longer inviolate because they are subject to the scrutiny of the civil administrators of the system.

At this point, I should like to ask you a question and be allowed to answer it. When you are sick what kind of a physician do you want? I am sure you want one who is sympathetically interested in you and who you feel is willing to give all the time necessary to bring you back to health, not one who is treating you because he must and who is going to spend just enough time with you to be able to fill out the necessary forms to prove that he handled your case. Each patient presents individual problems, not the least important of which many times are psychologic. These require lengthy conferences for solution. It is this vital personal relationship between physician and patient that makes our medical problems so different from our educational ones. Patients can not be treated en masse the way pupils can be talked to in class-rooms.

In answer to the question "What system of medical care will assure continuation of the present rate of progress of the so-called medical sciences?," one has only to point out that productive medical research in this country is conducted on a scale not equalled in any other country. In fact, America is now the medical center of the world. Medical students now rarely go abroad for postgraduate medical training. Postgraduate courses for panel physicians are devoted largely to instruction in how to fill out the numerous official forms that are constantly being added to and revised. Could we expect to continue to attract our best young men into a profession requiring so much expense of time and money to prepare for with such a prospect as confronts the young medical man abroad?

Our system is not perfect. Defects exist and abuses occur. Adjustments are necessary. We are not unmindful of the problems involved in supplying adequate medical care to our large middle class. The problems are complex, and there are two sides to every question. The American Medical Association, realizing the complexity of the problems and believing that all existing insurance schemes are against the public interest, has as yet developed no plan for general application. However, it has been studying the problems assiduously for years. Thus far it has taken the attitude that the United States is composed of such varying units that no one plan as yet proposed could be applicable to all. Nevertheless, it has not hindered the hundreds of experiments being carried out by constituent bodies, and it has made available to all information concerning the various plans being tried. To date it has indicated that insurance plans providing unlimited medical care are economically and socially unsound and that the only form of insurance acceptable is the limited indemnity form. It believes also that postpayment plans of defraying the cost of medical care are feasible and are probably sufficient for the majority of the people. It further believes that the problems are neither so serious nor so pressing that sufficient time should not be taken to find the proper answers and to avoid the pitfalls of other countries.

I have now opened the way for a question that might well be asked: "What has the medical profession of Washington done to provide adequate medical care for all classes of people in the District of Columbia?" Some of you may have heard of the so-called Washington plan. I shall explain this briefly, prefacing my remarks by saying that it is not perfect and that the Medical Society of the District of Columbia is still studying ways and means of improving it. Three years ago the Society, in conjunction with the District of Columbia Dental Society and the negro medical and dental societies, conceived a plan which was promulgated with the coöperation of the Board of Public Welfare and later the Health Department, the Community Chest, the hospitals, and the Washington Council of Social Agencies. The organization resulting is now called the Health Security Administration of the District of Columbia.

The three constituent bureaus are at present housed in a building at Eighth and Eye Streets, N. W. One is the Permit Bureau of the Health Department, which previously existed and through which indigent patients receive permits to be hospitalized in the municipal hospitals. These patients have usually been examined and recommended for hospitalization by the Physicians to the Poor, who are part-time District employees, or by private physicians. Much of the professional service received by patients even in the municipal hospitals is rendered by private physicians who receive no pay.

Another bureau is the Central Admitting Bureau for Hospitals, an incorporated agency of the Community Chest, the functions of which are to determine who shall be the recipients of aid from the Community Chest for hospitalization in the wards of the private community hospitals or for medical examination and treatment in the outpatient clinics of these hospitals, and to disburse to the hospitals the funds allocated by the Community Chest for the purpose of providing hospital facilities for these people who when ill may be considered to be semi-indigent. These individuals pay part of their expenses for hospitalization, and the balance of the account is defrayed by the Community Chest. The medical services are rendered willingly by members of the staffs of the hospitals who receive no remuneration for their work.

The third bureau is the Medical-Dental Service Bureau, a non-profit corporation established and financed by the medical and dental professions for the purpose of aiding small wage-earners to budget their expenses for medical and dental services and to pay for them on the instalment plan according to their ability to pay. These people come to the Bureau either from their physicians and dentists or from nonprofessional sources. Not only may their bills for medical or dental services be paid through the auspices of this Bureau, but the expense of hospitalization may be similarly liquidated. The staff of of the Bureau sympathetically examines the income and expense accounts of the patient and helps him to determine how much he can afford to pay each payday on his medical bills. If the total amount of such bills comes to more than he can pay in a reasonable length of time, usually set at 10 to 12 months, the physicians or dentists who rendered the services are informed of this condition and are requested to adjust their fees to make settlement possible in the prescribed period. The cost of maintaining this Bureau is defrayed by a 10 per cent retention of the amount of the fees paid the physicians or dentists and 8½ per cent of the amount paid the hospitals. Thus, the patient is receiving the services of the Bureau without cost to himself, and he does not have to worry about how much he shall pay this month or next month to the hospital or to any of his physicians or dentists. He merely pays the predetermined amount each payday to the Bureau. Furthermore, he may go to any hospital and select any physician or dentist he desires, provided only that the latter is a member of one of the affiliated medical or dental societies. Due to the difficulties of properly publicizing the existence and functions of this Bureau it has not developed to the extent of its potentialities of usefulness, but it has already made it possible for thousands of patients to receive adequate medical care. Also, it does not entirely solve all of the difficulties of making such care available in all cases, and that is why the Medical Society of the District of Columbia is now investigating plans for spreading the cost of medical care over a large block of people. I have already mentioned that the limited indemnity insurance principle may be found to be the method of choice for accomplishing this purpose.

The latter is the principle upon which group hospitalization is based, and I can not praise too highly Group Hospitalization, Incorporated, our local organization established more than 3 years ago and which now has on its rolls more than 50,000 potential beneficiaries. For sixty-five cents a month paid to this non-profit organization the member may be hospitalized without additional expense in any of our private hospitals for a period of 3 weeks in any one year. For a somewhat larger amount dependents of the member may also receive this benefit.

These plans, now well established, serve greatly to reduce the financial burden imposed upon the small wage-earner by sickness, especially in the so-called catastrophic cases. They do not decrease the quality of medical service, they do not destroy the traditional physician-patient relationship, and they preserve the inviolability of medical records. Unfortunately, many of those persons who are decrying the competitive system of the practice of medicine, which has accomplished so much toward improving the quality of medical service, seem to be unaware of their existence; otherwise they would not be so vociferous in proclaiming the necessity for establishing destructive insurance schemes and even government subsidies to provide poor medical care for those who would not want it after they received it. Let these well-intentioned persons first acquaint themselves with the already existing organizations that have been described; let them allow time for their development and adequate trial; let them be broad-minded and even aid in the dissemination of knowledge of their existence and advantages.

In conclusion, let me state that this forum was planned for the express purpose of bringing about a better understanding of the mutual problems of the public and the medical profession. We, the Medical Society of the District of Columbia, want you, the people of the District of Columbia, to know that we are exerting all our efforts to make it possible for you to receive the best medical attention when you are sick. We never have, and shall not object to any change that can be clearly shown to be in the best interest of the public. In the ultimate analysis our stand must be, and is, that what is best for the people is best for us.

REMARKS BY PRENTISS WILLSON, M.D.

THE WAY OUT

The situation precipitated throughout the United States by demands from various groups for more or less radical changes in the methods of furnishing and remunerating medical service has recently been brought to a sharp focus in Washington. This has resulted not alone from the organization here of a lay-controlled corporation to furnish such service but, also, from a quite general realization that the unique political situation of our city renders it peculiarly liable to governmental experimentation in the socialization of medicine. The two preceding speakers have demonstrated by both experience and logic that such experimentation is fraught with grave danger to the whole fabric and structure of American medicine, and that such threats should be the direct concern of physicians and laymen alike. It is probably fair to say that these dangers are more keenly realized by conscientious physicians; thoughtful laymen are more acutely aware of the disrupting economic and social consequences of serious or prolonged illness. Such a situation can only result in differences of opinion as inevitable as they are unfortunate. The impartial observer of a controversy the parties to which are thus psychologically motivated, immediately detects a situation in which clear thinking and mutual restraint and tolerance will be desirable in direct proportion to their difficulty of achievement. This forum, under the auspices of the Medical Society of the District of Columbia, is a sincere effort to attain a civic approach to this problem characterized by these desirable qualities rather than by recrimination. In this effort the Society does not propose to content itself with the public presentation of its position alone; it honestly proffers its coöperation with and sympathetic aid to any interested lay groups, publicly or privately sponsored, whose qualification need only be a sincere desire, altruistically motivated, to attain more uniform medical care for all our citizens. To this end it has passed the following resolution:

In view of the public forum which has been arranged under direction of this Society for next Sunday afternoon, and of the contacts which may grow out of that meeting between the Society and numerous public groups, and because of the vital importance of improving the relations of the medical profession with the public in general;

And in view of the fact that the Board of Trustees of the American Medical Association has very recently issued a call for state and county medical societies to assume leadership in determining for each locality in the United States the prevailing need for medical and preventive medical service where such may be insufficient or unavailable, and to this end securing the coöperation of state and local health agencies, hospital authorities, the dental, nursing and correlated professions, welfare agencies and community chests; therefore, be it

Resolved, That the President of the Society is hereby authorized and directed to appoint a Public Relations Committee of not to exceed seven members; and be it

Further Resolved, That the duties of the Public Relations Committee shall be to arrange and hold conferences with leading citizens of Washington and especially with the responsible heads of groups and organizations and with representatives of those agencies and organizations named in the second paragraph of the preamble to these resolutions; to the end that the principles and aims of the medical profession may be better understood by the public and that the Medical Society may have the advice and coöperation of the leaders of the community in devising plans for the more complete and adequate care of the medical needs of all the citizens of Washington; and be it

Further Resolved, That the Public Relations Committee shall report to the Executive Committee from time to time its findings and recommendations.

The Medical Society of the District of Columbia sincerely hopes this offer will meet with instant response, and be productive of conferences that will ultimately result in determining methods of distributing medical care in Washington not only mutually satisfactory to all its citizens but capable of serving as an example and model for the Nation of which it is the capital.

REMARKS BY
HENRY C. MACATEE, M.D.

Question: "Why Could Not Physicians Give Just as Good Medical Care if They Were Paid a Salary as They Can Under the Old Fee System?"

Dr. Macatee: I am going to assume that the question is: Why couldn't *I* serve my patients as well if I were paid a salary as I can on the fee system? I am assuming also that some gentleman in the audience sent up the question, and I shall make my reply directly to him.

If, sir, *you* should offer to pay me a salary to look after you and your family, I might consider the offer, although I should dislike to limit my activity that way. But coming from you, I might consider it because you yourself made it and the relationship would be between you and me. You chose me in the first place for good reasons to yourself; and in considering your offer I have the chance to choose or reject you. Moreover, if I accepted your offer, you could get rid of me and I could get rid of you.

But, if some other man were paying my salary, you would get me because you paid him something for the privilege of getting somebody *he* chose. If you didn't like me, you would have to take me anyhow—or give up the privilege for which you paid the man who pays my salary. Or if you did like me, the next time you wanted me the man who pays my salary might say: "You can't have him; I want him to do something else." Or if you should say to me: "Doctor, I want you right now," I might have to say: "I can't come to you right now; the man who pays my salary says I must go to somebody else." Or if I were giving you as much service as you want, or as I think you ought to have, the man who pays my salary might say: "Here, you can't give that fellow so much time. I want you to see more people who pay me to send you to them."

Then, if you were very ill and I knew the very person who could best help me do for you just what you might need, I couldn't bring that person; I should have to bring the person hired by the man who hired me.

And if, as so often is the case, my really important function should be to help heal your broken heart, at times so much more important than to heal your broken leg, I couldn't do it, because you are not going to reveal the rifts in your heart and the unhappiness in the depths of you to a man hired by somebody else.

And again, I couldn't serve you so well because I wouldn't have your entire respect. The real reason for your paying some one who pays me is to get something cheap. And you would look upon me as cheap; and I should feel somewhat cheap. And when, in the long run, you would send for me for some trivial reason, at your own convenience on some Sunday or holiday, because you want to get what you are paying for, I would hold you a little in contempt; and that's exactly what you would get—only what you are paying for.

Finally, I couldn't serve you as well if I were hired by somebody else because I wouldn't be a contented or a happy doctor; for I should know in my heart that I had surrendered to a force which is trying to lead a free and glorious profession into captivity, and in my heart of hearts I should know that I had sold my professional birthright for a mess of pottage.

TRANSACTIONS OF THE WASHINGTON SOCIETY OF PATHOLOGISTS

The meeting of the Washington Society of Pathologists was called to order at 1:30 P.M., Saturday, January 8, 1938, in the Army Medical Museum by the President, Dr. Oscar B. Hunter. There were 21 members present. There was a discussion concerning the formation of the Academy of Pathology, a tentative Constitution of which was adopted. Dr. L. L. Madsen of the Bureau of Animal Nutrition Division of the National Agricultural Research Center, Beltsville, Maryland, was proposed for membership, and Dr. Arthur A. Nelson of the National Institute of Health was proposed for associate membership.

Presentation of Cases

Dr. R. D. Lillie presented 25 slides from the case of a Negro laborer, aged 47 years, who about October, 1936, noted a small, firm, painless nodule in the middle of his back. About August, 1937, this began to increase in size rapidly and became painful by October. On admission, October 19, 1937, there was a large flattened mass, "the size of a flattened grapefruit," at the level of the scapular spines and a little to the left in the back. Several small satellite nodules were found around this mass. The tumors were nodular and attached firmly to the underlying tissue. The liver was palpably enlarged to about 2 cm. below the umbilicus and to 7 or 8 cm. to the left of the midline. The Kline and Kahn tests were 4 plus, the red blood cells 3,200,000, the blood nonprotein nitrogen was 76 mg. per 100 cc. of blood, and the icterus index was 5. A biopsy from the left axillary region showed adenocarcinoma, probably metastatic, with kidney and liver suggested as possible sources. The patient died 24 days after admission on November 12, 1937. At autopsy the back tumor was 15 cm. in diameter, nodular, hard, firmly attached to the musculature and extended between the ribs to the pleura on the left in the third and fourth intercostal spaces. The right diaphragmatic pleura and visceral pleura of both lungs were studded with small tumor nodules. The liver was greatly enlarged, 3180 Gm. brownish red, studded with small white centrally necrotic nodules, and contained in both right and left lobes tumor masses 5 to 8 cm. in diameter. The stomach wall showed several tumor nodules, one of which was sectioned and proved to be a neurofibroma. A few small peritoneal nodules were noted, and the abdominal lymph nodes were enlarged and infiltrated by tumor, the hepatic nodes most, the peribronchial nodes slightly. The pancreas, adrenals, spleen, kidneys, bladder, prostate, testes and intestines showed no tumor. The heart weighed 360 Gm.; the myocardium of the ventricles, especially of the left, was largely replaced by tumor nodules 5 to 20 mm. in diameter.

The slides presented were from the heart and liver. No cross striations could be found in the tumor cells, and apparent transitions from liver cell cords to tumor were readily demonstrated. Tumor areas in the liver carried considerable fibrous stroma, but the intervening liver was not cirrhotic. Intercellular reticulum was not formed. Melanin was not demonstrated. The subcutaneous tumor was covered by epidermis and an intact flattened papillary layer of derma. The case was reported as malignant hepatoma with metastases to the lymph nodes, pleura, heart and subcutaneous tissues.

Dr. Henry L. Wallenweber presented 25 slides from the case of a white man, aged 53 years, who had small bluish tumors on the anterior surface of the left thigh in the subcutaneous tissue, of 8 to 9 years' duration.

In the discussion, the associated simple coil of glands, the vascularity and the cyst formation were considered as indicating sweat gland origin.

Captain Elbert DeCoursey presented 25 microscopic sections of a whole eye from the case of a colored man, aged 24 years, who was struck in the left eye by a piece of wood. An iridectomy was performed. Iridocyclitis became worse, and the fundus became obscured. The eye was enucleated. Grossly, there was a scar at the limbus. The retina was displaced to the region of the ora serrata. The uveae appeared thickened, the retina was detached, and the eye was filled with cloudy gelatinous exudate. Microscopically, foci of epithelioid cells containing Langhans giant cells which had engulfed melanin pigment appeared in the uveal tract along with a diffuse uveal lymphocytic infiltration.

In the discussion the nomenclature of sympathetic ophthalmia and the microscopic picture, both of the exciting and sympathetic eye, were considered.

Dr. George Tolstoi presented microscopic slides from the case of a 45-year-old white man who had a small mass in the left side of his neck at the posterior triangle. When it was removed it resembled a dumbbell, and one end projected beneath the sternocleidomastoid muscle. It was firm, rubbery in consistency and light yellow, had been present for 8 years and had caused some difficulty in putting on his collar.

The discussion centered around neurofibroma, xanthoma and chordoma of this region.

Dr. Roger M. Choisser presented the gross heart and microscopic slides from the case of a white man, aged 30 years, whose chief complaint was weakness, a feeling of congestion in the chest, cough and upper right quadrant tenderness. The onset had occurred one month before (November, 1937), with a severe cold and bronchitis. On December 14, 1937, he was nauseated and vomited while at work, following the eating of a large meal. He complained of a painless swelling in the neck and face and tenderness over the upper right quadrant. He was seen by a physician and given intramuscular injection of liver daily with subsidence of the swelling and less pain in the upper right quadrant. His wife stated that he had become a noisy sleeper, wheezing and breathing loudly. On examination the patient was orthopneic but apparently not acutely ill; the lymph nodes and submaxillary glands were palpable, the thorax was hypersthenic and symmetrical; resonance was impaired over the posterior chest bilaterally and over the anterior right chest; voice and breath sounds were normal; there were no râles; the heart was greatly enlarged to the right and left and had an irregular rhythm. X-ray showed fluid in both pleural cavities and pericardium. The blood pressure was 120/110; the dorsalis pedis and posterior tibial arteries were not palpable; on December 28 the liver was 4 fingerbreadths below the costal margin; no fluid was evident; the leukocytes numbered 13,500 to 16,550 with a normal differential count; paracentesis of the pericardium resulted in the removal of 700 cc. of bloody fluid. The clinical diagnosis was pericarditis with effusion.

In the discussion it was noted that this was very similar to the rather unusual case of Kaposi's disease reported at the December, 1937, meeting, which involved the heart, pleural cavity and liver. At autopsy the abdomen contained a moderate amount of clear straw-colored fluid; there was bilateral hydrothorax; both lungs were collapsed. The heart occupied almost the entire mediastinum; 1000 cc. of fluid was removed which looked like pure blood; the right auricle was about the size of a grapefruit, hemorrhagic on the outside, and on opening the heart one could see this tumor growing in the auricle to completely obliterate the right auricular cavity; on the opposite side one could see the hemorrhagic tissue similar to that found in the other case of primary Kaposi sarcoma. The histological sections were comparable to those found in the other case. Inoculation of a rabbit intraperitoneally and intravenously, and of some mice subdurally, has caused no reaction. The interesting factor was 2 cases occurring within a month, both in young men and both dying of the cardiac syndrome in the same hospital. There was no history of any skin lesion. The lymph nodes of the mediastinum did not show any involvement, but in the other case there was involvement of the liver and also granulomatous-like lesions of the diaphragm.

Dr. George Tolstoi presented the case of a 62-year-old woman who had had complete motor and sensory paralysis from the umbilicus down for 3 weeks prior to operation. A tumor was removed from the region of the tenth thoracic vertebra and it did not invade the dura. It extended for about the length of 3 vertebrae.

In the discussion chronic inflammation and Hodgkin's disease were considered.

Dr. L. L. Ashburn presented a gross specimen from a case of a hydatid mole.

The meeting adjourned at 4 P.M.

CALENDAR FOR COMING MEETINGS

Thursday, February 24: *Section on Pediatrics.*
"The Vitamin Requirements of Children Including Original Research on the Vitamin B Complex." William H. Sebrell, M.D., Nutritionist, National Institute of Health.

Wednesday, March 2: Stated Meeting. Reports of committees, election of members, nominations for elective office, etc.

Wednesday, March 9: Program furnished by the *Washington Heart Association.*
"The Diagnosis and Management of Angina Pectoris." Francis C. Wood, M.D., Associate in Medicine, University of Pennsylvania School of Medicine; Fellow of the Robinette Foundation, Hospital of the University of Pennsylvania, Philadelphia.

Wednesday, March 16:

1. "The Vestibular (Barany) Tests—Their Diagnostic Value in Labyrinth and Intracranial Diseases." Victor R. Alfaro, M.D.
2. "Pharmacological and Chemotherapeutic Studies of Some New Compounds Active Against Bacterial Infections." Sanford M. Rosenthal, M.D.

Wednesday, March 23:

1. "Syphilis and Crime." George W. Creswell, M.D.
2. "Sex Crimes: Their Pathogenesis, Relation to Neuroses and Perversions." Benjamin Karpman, M.D.

Wednesday, March 30: Program furnished by the *Washington Society of Pathologists.*

1. "Congenital Cystic Diseases of the Lungs." George Tolstoi, M.D., and Oscar B. Hunter, M.D.
2. "Etiology and Pathology of Sudden Cardiac Death; A Study Based on 1798 Consecutive Necropsies." Roger M. Choisser, M.D., and Thelma B. Dunn, M.D.
3. "Bilateral Cortical Necrosis of the Kidneys." Lieutenant Colonel James E. Ash, M.C., U. S. Army.

NEWS AND PERSONALS

George Washington University School of Medicine announces a postgraduate assembly with courses of instruction in connection with the Annual Home Coming, February 18–19. Of special interest is a symposium on cardiovascular diseases and a panel discussion on obstetrics; in addition there will be scientific exhibits. A banquet follows on Saturday night, February 19.

District of Columbia Dental Society will conduct its Five State Postgraduate Clinic, March 6–9, 1938, at the Mayflower Hotel. The committee has arranged a scientific and educational program, which it feels will not only be of interest to the dental profession but to the medical profession as well. All members of the American Medical Association, upon presentation of their card, will be registered and welcome. A special invitation is extended to the members of the medical profession of Washington.

Postgraduate Institute of Philadelphia County Medical Society, March 28–April 1, will have as the general subject: "Diseases of the Digestive Tract." Meetings will be held in the Bellevue-Stratford Hotel, Philadelphia, Penna. Registration fee, $5.00. Write to the Philadelphia County Medical Society, Twenty-first and Spruce Streets, Philadelphia, Penna., for further particulars.

American College of Physicians announces postgraduate courses, March 21–April 2, to precede the annual convening of the College in New York City, April 4–8, as follows: *General Medicine*—Harvard Medical School, Boston; Columbia University Faculty of Medicine, Mount Sinai Hospital, New York City; New York Postgraduate Medical School and Hospital, New York City. *Neuropsychiatric Factors in Internal Medicine*—Columbia University, New York City. *Diseases of Metabolism and Practical Problems of Dietetics*—Columbia University, Mount Sinai Hospital, New York City. *Cardiovascular Diseases, and Gastro-intestinal Diseases*—University of Pennsylvania, Graduate School of Medicine, Philadelphia.

For fees and general program address the American College of Physicians, 4200 Pine Street, Philadelphia, Penna.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, announces a foundation prize of $500.00, which award will be made at the Annual Meeting of the Association, at which time the successful contestant must appear in person to present his contribution as a part of the regular scientific program, in conformity with the rules of the Association. The successful contestant must meet all expenses incident to the presentation. Write to Dr. James R. Bloss, Secretary, 418 Eleventh Street, Huntington, West Virginia, for full details.

Jacobi Medical Society will hold its annual banquet at the Raleigh Hotel, Saturday, April 23, 1938. Dr. Ira S. Wile, of New York City, will be the speaker.

Pan American Medical Association, Washington, D. C., Chapter, held its meeting at the Mexican Embassy, December 5, 1937. The new officers are as follows: Drs. F. Castillo Najera, *President*; Augusto S. Boyd, *President-elect*; James Alexander Lyon and C. R. Reynolds, *Vice Presidents*; A. A. Moll, *Secretary*; Victor R. Alfaro, *Treasurer*; Tomas Cajigas, Chairman, G. B. Trible, Custis Lee Hall, Eugene R. Whitmore, Hugh H. Young and H. H. Schoenfeld, *Board of Regional Directors.*

The program:

1. "Cancer Research." Ludvig Hektoen, M.D., Executive Director, National Cancer Advisory Council.
2. "Some Phases of Russian Medicine." Henry E. Sigerist, M.D., Johns Hopkins University.
3. "Some of the Latest Surgical Advances in Ophthalmology." (Illustrated with colored motion-pictures.) Ramon Castroviejo, of Spain and New York.

About 90 physicians, including a group of Latin-Americans taking postgraduate courses at Johns Hopkins University, attended.

Association of Military Surgeons will meet in Rochester, Minn., October 13–15, 1938. Of particular interest will be the conjoint meeting with the Medico-Military Inactive Duty Training Unit. The latter holds annually in the fall a refresher course under the auspices of the Mayo Foundation. Its membership is comprised of active and reserve officers of the United States Army, Navy, Public Health Service, National Guard, and Veterans' Administration. The possibilities offered to the profession in a meeting of this kind should be immediately apparent. Invitations from various cities were considered by the Executive Council at a recent meeting which was attended, in addition to members of the Council, by Major General Charles R. Reynolds, Surgeon General of the Army; Rear Admiral P. S. Rossiter, Surgeon General of the Navy; Dr. Thomas Parran, Surgeon General of the United States Public Health Service; Dr. Philip B. Matz, representing Dr. Charles M. Griffith, Medical Director of the Veterans' Administration, and other outstanding medico-military men. The selection of Rochester, Minn., will meet with general approval and forecasts a large attendance.

American Board of Ophthalmology will hold the 1938 examinations in San Francisco, June 13, in Washington D. C., October 8, and in Oklahoma City, November 15. All applications and case reports must be filed, in duplicate, at least 60 days prior to date of examination with Dr. John Green, 3720 Washington Boulevard, Saint Louis, Mo.

Kober Foundation, Georgetown University, which dates from March 28, 1920, and has annually served to bring before the Washington public outstanding speakers, will on March 28 have as lecturer Dr. Wallace M. Yater, whose subject will be "Goiter and the Heart: An Exposition of the Present Status of Our Knowledge of the Subject, Including Original Research Work in this Field." Under the terms of the founder, the late Dr. George Martin Kober, an honored member of the Medical Society of the District of Columbia, on alternating years the Association of American Physicians, the Medical Society of the District of Columbia, and the Association of Military Surgeons nominate speakers. Of interest is the following quotation:

> "Dr. George M. Kober, Dean of the Georgetown Medical School, in commemoration of the Fiftieth Anniversary of his graduation, has created a fund for the following purpose:
>
> "The income of Ten Thousand Dollars is to be used annually in awards for lectures by men who have contributed to the progress and achievement of the medical sciences or preventive medicine. The lectures to be delivered under the auspices of Georgetown University in Washington, D. C., and to be published as a continuation of a series of lectures inaugurated March 28, 1920, as a vindication of Animal Experimentation."

At a meeting held January 24, 1938, Dr. Yater was the unanimous choice of the Executive Committee of the Medical Society of the District of Columbia. The following outstanding scientists have in in the past appeared as lecturers on this interesting program: Drs. John J. Abel, Oscar B. Hunter, Victor C. Vaughan, Simon Flexner, William A. White, Bailey K. Ashford, Frederick George Novy, Ales Hrdlicka, Rolla E. Dyer, Walter Bradford Cannon, Laurence Stephen Otell, Lucius W. Johnson.

DOMICILIARY CARE OF INDIGENT AS RELIEF FOR GALLINGER MUNICIPAL HOSPITAL

The District of Columbia has within its Health Department set up Physicians to the Poor who have generally been underpaid, albeit performing the important work of giving domiciliary care to the indigent sick. By broadening their sphere of activity the relief of crowded conditions at Gallinger Municipal Hospital could be accomplished. This is now recognized by authorities and the profession. It is hoped that appropriations may be obtained from the Congress to take care of necessary increase in salaries and for some 40,000 prescriptions and dressings at $0.20 each, figured as a minimum to meet requirements of outpatients. Conservation of finances and space at Gallinger Municipal Hospital cannot fail to result from relieving the hospitalization load.

LICENSED PRACTITIONERS OF THE HEALING ART AND ALLIED PROFESSIONS FOR THE DISTRICT OF COLUMBIA*

December 31, 1937

Doctors of Medicine		1,788	
Physicians (Army, Navy and Public Health Service)		581	
Doctors with courtesy privileges in Virginia and Maryland, Border States		68	
			2,437
Midwives		9	
Doctors of Dental Surgery (White)	596		
(Colored)	83	679	
Dental Hygienists (White)	54		
(Colored)	7	61	
Chiropodists		75	
Pharmacists (Active practice, approximately)		800	1,624
(Drug Stores, 379—License Bureau)			
Optometrists		88	
Osteopaths (Surgeons, 19)		66	
Chiropractors		259	
Naturopaths		47	
Naprapaths		1	461
Grand Total			4,522

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* As furnished by Dr. Joseph F. Elward.

SUMMARY OF MEMBERSHIP MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA

February 15, 1938

Active Members	773	
Life Members	52	
Associate Members	141	
Honorary Members	7	
		973
Applications Pending: Active Members	55	
Associate Members	13	68

MEDICAL ANNALS
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WHAT MAY BE DONE IN CONTROL AND PREVENTION OF THE COMMON CONTAGIOUS DISEASES*

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When we learn that there are nearly 3,000,000 cases of communicable diseases reported annually in this country[1] (and many more which are not reported) we realize the importance of this subject. These diseases, about half of which occur in children, cause about 15 per cent of the total deaths. To the deaths and the economic and social losses from cases must be added the permanent disabilities resulting from communicable diseases which may handicap the child through his entire life. Damaged hearts and kidneys as well as increased susceptibility to other infections follow in the wake of communicable diseases in children. Therefore, economic and humanitarian motives alike demand that every known effective means of control be utilized in the prevention of these diseases.

It is not the purpose of this paper to discuss prevention with reference to the whole list of communicable diseases but rather to limit its scope to the common contagious diseases of children including both general and specific measures for prevention.

The recognition and prompt reporting of a contagious disease is the first step toward control. For this reason parents, teachers and others have a very definite responsibility to secure competent medical opinion under suspicious circumstances. On the physician must rest the responsibility for the authoritative immediate reporting of the individual case.

The isolation of cases and quarantine of contacts early in an outbreak are most effective as control measures, but even so it must be admitted that isolation and quarantine have proved to be profoundly disappointing in the control of the common contagious diseases of childhood. The first reason is that a large proportion of the spread has been accomplished by the time the disease is recognized clinically, the second, that public support of isolation and quarantine of the familiar diseases of childhood is, in general, indifferent. Therefore, since a nonsusceptible population is the greatest assurance against epidemics of a disease, those artificial, active immunizing agents that are available must be fully utilized.

All schools both private and public should have a definite routine of:

1. Morning inspection of every child by nurse or teacher who is familiar with ordinary signs of disease.
2. All suspects referred to the school physician, local health officer, or family physician for diagnosis.
3. Exclusion of suspects and recognized cases until certified by competent authority as safe to return.

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* Read at the joint meeting of the Section on Pediatrics and the Society, January 19, 1938.

CHICKEN-POX

The incubation period of this disease is 2 weeks, and it is communicable about 24 hours preceding the skin eruption. Children with this disease should remain away from school 14 days from the beginning of the disease and present upon their return to school a certificate of recovery from their physician. Immune contacts may attend school upon due proof that they have had the disease. Non-immune contacts exposed at home may attend school for 12 days from the date of exposure counting the day of exposure as the first day. Then they should be excluded from school for the ensuing 6 days, when they may return upon certificate by a physician that they present no evidence of chicken-pox.

Children exposed at school or elsewhere who have not had the disease may continue in school upon a "staggered-hour" basis or under careful scrutiny by parents and at school from the eleventh through the nineteenth day after exposure and excluded at the instant fever, malaise, headache or any new spot appears on the skin. By this scheme, in most instances, chicken-pox can be kept from spreading too markedly and at the same time the children may be spared great loss of time from school.

There is no practicable active immunization. Passive immunization may be given with convalescent serum in institutional outbreaks or in exceptional instances.[2] If 10 cc. or more of pooled sera is given intramuscularly on the first or second day of exposure from convalescents of 4 to 6 weeks standing the disease will probably be prevented in most instances.

THE COMMON COLD

The common cold is such a great cause of illness, causes so much transient disability, and the ends to which it may lead are so serious that some mention should be made of it in such a program as this.

The period of incubation is usually between 12 to 24 hours. The source of infection is the nasal and mouth discharges of infected persons transmitted by droplet infection, coughed or sneezed or explosively spoken out into the air.

The only means we have of preventing the serious consequences of the common cold is through maintaining a high general resistance of the child and advising nonassociation with the infected. Diet, rest, fresh air, exercise and warm clothing help children to build resistance. Sanitary disposal of nose and throat discharges from cases should be taught the parents, and the child should be kept home from school, certainly during the explosive period.

DIPHTHERIA

Diphtheria is a disease which should be almost nonexistent, but unfortunately through neglect, ignorance and poverty on the part of the general public, and a failure on the part of the physician to use to the fullest our methods of immunization, the disease still takes a terrific toll in deaths each year throughout the United States. Here in the District of Columbia we still have patients die every year from diphtheria, and their deaths are all preventable.

All infants should be actively immunized against diphtheria at 6 months of age, and a Schick test should be done 3 to 6 months later to see if the child has been effectively immunized. We are not sure that he is immunized until the Schick test is found to be negative. The test should be repeated again at school age.

The immunizing material used in infancy is toxoid, either alum precipitated or plain. The former is given in 1 dose of 0.5 cc. subcutaneously, and the latter in 2 injections of 1 cc. each at intervals of 3 weeks. Children over 8 or 10 years of age probably should be immunized with toxin antitoxin, in which case 1 cc. is injected 3 times at weekly intervals, because the toxoid causes marked reactions in these older children.

The Schick test should be given before immunization to children of the school age because some of them will have acquired an immunity by that time. In infancy the preliminary test is unnecessary, for we know that infants generally have lost the immunity acquired from their mothers by the age of 6 months.

The Schick test consists of the intracutaneous injection of 0.1 cc. of salt solution containing one fiftieth of a minimum lethal dose of diphtheria toxin. The injection is most readily done with a tuberculin syringe and a 27 gauge needle. If the test is read at the end of a week there is little need to do a control and positives are readily determined.

MEASLES

The very common communicable disease of measles has been of extreme interest in recent years. The incubation period is 8 to 10 days from exposure to the initial fever, and 12 to 14 days to the rash. It is considered communicable from the onset of catarrhal symptoms (i.e., at least 3 days before the rash) until such time as the catarrh has ceased. It is one of the most readily transmissable of the common contagious diseases.

Children exposed at home or over an indefinite period should be kept out of school until 14 days have passed since the last day of exposure. Exposed older children should be separated from infants so as not to re-expose the latter.

Children exposed at school or elsewhere on a definite occasion, as at a party, may be allowed to attend school for the next 7 days. They should then be isolated until the fourteenth day after exposure has passed. On re-admission to school the exposed child should have a normal temperature and be free from all evidence of catarrh.

In general, the older the child, the less dangerous is measles. It is desirous to completely protect against measles in certain instances and to modify the attack in others. Complete protection is advised for babies under 2 years of age, for patients in hospital wards, and for children suffering with tuberculosis and other debilitating diseases. For other children who are in good health it is usually wiser to give partial protection and merely modify the disease, thus allowing the patient to acquire lifetime immunity to the disease. The complete protection against measles, of course, only gives him a passive immunity which is gone in 4 to 5 weeks leaving him as susceptible as before the injection.

The materials used for prevention and modification are the same, i.e., convalescent serum, whole blood, or placental extract. If a sufficient dose of a protective serum is given during the first 5 or 6 days after exposure complete protection may be obtained for 2 to 5 weeks. If given after the sixth day complete protection cannot be obtained. We must remember here that exposure dates back to at least 3 days before the first evidence of rash in the exposing patient.

The dosage of immune serum must vary according to a number of factors: the length of time that has elapsed since the donor had the measles and likewise since the patient was exposed, the age of the patient, and whether serum or citrated whole blood is to be given. If the serum of an adult who has had measles in childhood is to be used, 2 or 3 times as much will be necessary as if the serum from a recently convalescent patient were to be given. The heavy and repeated inoculations of home exposures require larger doses than do the probably lighter inoculations of classrooms, hospital wards, and especially outdoor exposures. Hence, it is not practical to specify doses for the many combinations of circumstances that are possible. One example will suffice. To be reasonably certain of protecting a sickly 5-year-old child exposed at a party 5 days before, at least 8 to 10 cc. of convalescent serum, 20 to 25 cc. of parental serum, or 40 to 45 cc. of parental whole blood should be given intramuscularly.

For the modification of measles smaller doses are given, i.e., 3 to 4 cc. of convalescent serum, 10 to 15 cc. of parental serum, or 20 to 30 cc. of parental whole blood, injected deep into the buttocks of the exposed child within 6 days of the exposure will mitigate the case of measles in the great majority of instances.

Placental extract has the advantages of smaller dosage, and the commercial source is more adequate than that of convalescent serum. It has the disadvantages of causing troublesome local reactions, and what constitutes the correct dosage for modification without prevention is not yet clearly defined.

To sum up the question of measles, we may say that inoculation with convalescent serum is the best preventive measure known against measles because of its high protective value, the resulting low incidence of complications, and the absence of serum reactions.[3]

SCARLET FEVER

The incubation period of scarlet fever is 1 to 7 days, usually 2 to 4. These patients should be quarantined for 21 days from the onset of the disease and released only if there are no complications causing discharges and provided desquamation is over. Children remaining at home with a case of scarlet fever may not return to school during the existence of the case. Children who have not had the disease and who have been exposed at home or at school may not return to school until after 7 days after the last exposure. A child exposed at home may return to school after 7 days if removed from home and presents no sore throat or other symptoms of the disease at the end of the seventh day.

The Dick test is used to determine susceptibility or immunity to scarlet fever. It consists of the intracutaneous injection of 0.1 cc. of a standardized dilution of the toxin produced by the scarlatinal Streptococcus hemolyticus. Susceptibility is shown by reddish discoloration at the site of the injection and should be read between 18 and 24 hours after the injection. It should be considered positive if there is even a slight area of redness or flushing of an area 1 cm. in diameter at the site of the injection.

Passive immunity may be obtained lasting 1 to 2 weeks by an injection of scarlet fever antitoxin, but owing to the frequency of severe reactions this prophylactic use of the antitoxin is seldom justified.

Active immunity may be produced by repeated injections of toxin. These injections are usually 5 in number, given 1 week apart, beginning with 500 S.T.D., and ending with 80,000 to 100,000. Reactions are rather marked following these injections, but their use is justified under certain circumstances, as in homes or institutions. The immunity may last no longer than 1 to 2 years. Its routine use in private practice is apparently not justifiable.

Recently Hyland and Anderson[4] have recommended the use of convalescent serum as a prophylactic for scarlet fever. They inoculated 102 exposed patients, and 96.08 per cent did not have the disease. According to Best[5] only 2.4 per cent of contacts will develop the disease anyway, so that it would seem that with 3.9 per cent contracting the disease after injection with convalescent serum one cannot say that it has any prophylactic value at all.

WHOOPING-COUGH

Whooping-cough is one of the highly contagious diseases of childhood and is communicable from the onset of the catarrhal stage and remains so probably for 4 weeks after the whooping and vomiting stage. The incubation period lies within 2 weeks. Children with a definite exposure at home should be excluded from school until 14 days have elapsed after their exposure, but children exposed in school may be allowed with comparative safety to remain in school if inspected and watched carefully and separated immediately from their classmates upon the onset of a fresh cough.

With an average annual number of 200,000 cases with 5,200 deaths,[6] a death for every 39 cases reported, it behooves us to prevent this disease in the very young if possible, for it is only fatal in the first few years of life. Our present method of prevention, imperfect though it may be, is through use of vaccines made from Pertussis bacilli after the method of Sauer.

A total of 8 cc. is injected. Two injections are made of 1 cc. each followed in 1 week by 2 injections of 1.5 cc. each, which are repeated 1 week later. The sites for injections should all be different to avoid abscess formation. It is desirable to give this vaccine in infancy at about 10 months of age or earlier.

The value of this vaccine as a preventive for whooping-cough is still an open question, but inasmuch as it will do no harm and if it will spare the child from whooping-cough for several years, as it is claimed by some workers, perhaps by general use of this vaccine we shall see a reduction in the mortality rate.

SMALLPOX

This subject has been covered in a former paper[7] but it is recommended that immunization be carried out in the early months of life or certainly before the second birthday, since the incidence of reactions and complications is fewer in the very young than at the school age.

MUMPS

This disease has an incubation period of about 3 weeks, usually 16 to 18 days. The outside limits probably are 12 to 24 days. Children with mumps should be excluded from school until after complete disappearance of the swelling of the salivary glands. This disease may be serious after the age of puberty, and the use of convalescent serum has been advocated and used with favorable results in protecting against the disease. Its use may be justified in certain instances.

MENINGITIS AND POLIOMYELITIS

These diseases will not be discussed in this paper, since there are not yet any practical affective means of prevention which can be used with safety by the practitioner of medicine.

In conclusion, we may say that our preventive measures for the common contagious diseases of childhood are both relative and absolute. The prevention which we can offer is relative for measles, whooping-cough, and scarlet fever. Perhaps through the use of convalescent serum we should also add mumps and chicken-pox. We can give absolute protection for smallpox and diphtheria. Smallpox vaccination should be carried out during the early months of life, certainly before the second birthday. Diphtheria immunization should be done at the age of 6 months.

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ABSTRACT OF PAPER READ BEFORE THE SOCIETY

"THE DIAGNOSIS AND MANAGEMENT OF ANGINA PECTORIS,"[†][*] **Francis C. Wood, M.D.**, Philadelphia, Pa.

1. Anginal pain is merely an episode which occurs now and then during the course of arteriosclerosis of the coronary arteries, as a result of which the underlying process is often brought to light. It makes the course of this disease extremely unpredictable. Many patients live through these attacks and, after enough myocardial tissue has been destroyed by infarction, die of congestive heart failure.

2. There are all gradations of coronary pain, ranging from the mildest effort angina to the most violent fatal attack of coronary thrombosis. The typical angina of effort, and the typical coronary occlusion are usually recognized, but the intermediate types are frequently misinterpreted. Premonitory attacks of pain usually precede coronary thrombosis. Cardiac infarction frequently occurs without fever, leukocytosis, or a drop in blood pressure.

3. The pain of coronary artery disease is almost never sharp and lancinating. It is difficult to describe. It does not throb. It is often quite mild, rarely associated with a feeling of impending death, and often described as "gas" or "indigestion." Belching frequently relieves it and vomiting may accompany it. Sometimes patients deny that it is a pain and describe it as "pressure" or "shortness of breath." The pain is most frequently substernal. Coronary artery pain is most often missed when it occurs in a relatively young neurotic individual.

4. The electrocardiogram is very helpful in making a diagnosis, but a normal tracing does not rule out coronary artery pain. Cardiac infarction does not necessarily produce physical signs of its presence. The history is the main feature in the diagnosis.

5. The precordial pains of patients with hypertension and cardiac neurosis can usually be differentiated by careful questioning from those of coronary disease. The term "pseudoangina" does not help to clarify a diagnosis.

6. Treatment follows quite simply on accurate diagnosis. The patient with active infarction should be at rest until healing occurs. The length of time required varies tremendously in different patients. It is often underestimated. Drug therapy is helpful but not often spectacular in its results. Since we are without knowledge of the cause of coronary arteriosclerosis, our attempts to prevent its progress are probably ineffective. In the vast majority of cases surgical procedures probably can be classed as interesting experiments rather than therapeutic methods of proven value.

7. Anginal pain tends to subside as time goes on. Some years after a coronary occlusion a patient may consult a physician for some other reason and fail to mention the former attack until carefully questioned.

8. As a rule the patient and his family should be told of the true nature of coronary pain. However, pathological description is more accurate and humane than the use of such terms as "angina pectoris," "coronary occlusion," or "heart attack."

9. Of every case of pain in the abdomen, John B. Deaver said "think first, last and always of appendicitis," because dangerous mistakes are so commonly made when this disease is overlooked. For the same reason, therefore, when a patient over 30 has a dull pain of recent onset, coming in attacks located anywhere between the lower jaw and the epigastrium, especially if he calls it "gas" or "indigestion," "think first, last and always" of the coronary arteries.

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[*] Presented at a joint meeting of the Washington Heart Association and the Society, March 9, 1938.

[†] In this discussion the term angina pectoris is considered as including all types of painful attacks which occur in patients as a result of coronary artery sclerosis.

COMMON ERRORS COMMITTED IN HANDLING "NEUROTIC" PATIENTS

Isadore Rodis, M.D.

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A good doctor should know not only the physical and chemical condition of his patient but also something about the patient's mind and his views on the outside world. In the management of mental illness we are obliged to proceed even further, because it is essential, in addition, that we know a great deal about the development of the patient's personality and the relation of the latter to the various social and economic aspects of his situation.

This is a big task, and many books and articles dealing with mental illness have been written. However, so many of these writings are concerned with mere description and telling one what to do that it seems a good plan to gather a few "don'ts" and hints on what not to do. The suggestions made in this paper are intended for those who are not restricting their work to psychiatry but to all who deal with sick people. A number of practitioners feel that they are not qualified to treat mental illness, believing that they do not proceed properly or employ good principles. Others prefer not to be bothered with such patients, either because of the large time element involved or because the results are too uncertain. However, it is surprising what good therapy is really often employed by the very physicians who are not even aware that their efforts fall under the head of sound psychotherapy. These men use common sense, good judgment, interest and sympathetic understanding—all of which are essential adjuncts to successful treatment. Ofttimes, when it is pointed out that they are good psychiatrists in the sense that they utilize good principles, they are surprised and remark that they had not considered their efforts in that light.

There is always the possibility that if the patient is unable to obtain help and comfort from his physician he may resort to "faith healers" and other types of cultists who are only too eager to "help" him—and often succeed. There is no denying the fact that we lose a large number of our patients to these irregular practitioners who are sufficiently versed in the principles of psychology and exploitation to take advantage of these people who have not received adequate consideration from physicians. Some of the reasons for this "flight into quackery" will be found in the succeeding paragraphs.

In the management of the phenomena of disease it is always important to know what not to do. This applies to diagnosis as well as to treatment, to general practitioner and specialist, to physical disease as well as to mental. It reaches its greatest importance in the neuroses and in the handling of physical diseases which occur in "neurotics." As a matter of fact, the present approach to this subject was prompted by the unpleasant experiences of mismanaged "neurotics" as revealed in lengthy interviews with them. The following admonitions, therefore, represent an attempt to forestall errors in therapy as observed in a number of studied cases. For this reason the arrangement of the presentation may not appear logical but will, it is hoped, be helpful.

Do not be in a hurry. The patient can sense when he is being rushed. He frequently enters the physician's office with a determination to tell what is disturbing him. Arriving at this decision may have required many hours of anguished wrestling with his problem. If the physician is unable to spare the time to listen, to draw out the story and inspire confidence in the patient, he has lost a good opportunity to be of real assistance. Display a sympathetic attitude. Let the harassed patient feel that you are trying to help him—and he will talk. Some of the patients referred to psychiatrists describe their difficulties with relative ease. When they are asked, "Why didn't you tell this to your own doctor?," the common reply is either, "He didn't ask me about it," or, what is even worse, "He wouldn't listen when I tried to tell him."

Do not disregard unusual or unlikely physical complaints. For example, patients may complain that their nerves are unraveling, that their viscera are gone or that their food tastes queer. Others may state that their "feelings toward things have changed so that things look different" or that they have lost their former interests. These are common complaints in the early stages of some of the major psychoses.

Do not disregard sudden, unaccountable or unusual changes in behavior. In a child such changes may be an aftermath of encephalitis; in a young adult it may point to schizophrenia (dementia praecox); in middle age one must consider syphilis of the central nervous system, especially general paresis; in older persons senile or cerebral arteriosclerotic changes may be operating.

Do not neglect to make a thorough physical and neurological examination of those patients who have previously been in good mental health and now show mental symptoms. This applies especially to those past 40, and more specifically to those with so-called "neurasthenic" symptoms, such as fatigue, inability to concentrate, irritability, vague fears, insomnia, etc. In line with the recognized principle that syphilis is the "great imitator," the mental manifestations of general paresis may present features which will simulate any of the well-known syndromes seen in psychiatric practice. The physical and neurological evidence for this disease does not always follow a definite pattern; the final diagnosis is made almost entirely upon laboratory findings.

Do not use unfamiliar medical, psychiatric, or psychological terms in your interviews with patients. It is astonishing to discover what a variety of meanings different people attach to the same phrases. Have your patient explain in simple language what he is trying to convey to you rather than permit him to employ inclusive terms which may give you erroneous impressions.

Do not say "forget about it" when a patient has either described his symptoms or told you of some difficulties which may well be the cause of all his symptoms. Substitute the invitation, "Tell me about it." It may be that his efforts at "forgetting" have actually caused the symptoms, and besides, as the patient will tell you, if he could have succeeded in "forgetting about it" he would not have come to you for help. Discuss his difficulties with him. Explain his symptoms in a manner he can understand. Repeated assurance is often helpful. Assist your patient in modifying his situation, and if this is impossible, then help him to adjust himself to his troubles and to live with them.

Do not be reluctant to ask your patients about their sexual or marital life, especially in cases where such a question seems indicated. Many times the patient requires only a hint; one question may suffice to induce him to talk eagerly and freely of difficulties which may be causing all his symptoms but which he (or she) has been reluctant or ashamed to discuss. Experience teaches us that patients are not as reluctant to discuss such matters as we are led to believe. Misconception regarding the effects of masturbation is a common cause of symptoms, and it is advisable to discuss this matter freely whenever indicated. Many people believe that masturbation leads to insanity or causes some mysterious and vague sort of "physical weakness." Another common source of difficulty results from the matter of birth control and the proper use of contraceptive devices. To women especially, this last subject is extremely important, and its free discussion, followed by appropriate advice, is frequently productive of gratifying relief of symptoms.

Do not neglect to talk with the patient's family, relatives, and friends. They can often provide you with other bits of information concerning the patient's habits, daily life and personality. This knowledge is often valuable and may change the entire aspect of a case.

Do not indiscriminately prescribe marriage or children as a panacea for mental illness. Married life, even for the well-adjusted person, requires additional adjustments and is therefore more complex than the single state. If we fail to appraise the situation correctly or neglect to investigate the cause of the symptoms the entrance of children into the married state may even further complicate an already complex situation or make a simple one more involved.

Do not indiscriminately send patients away from home, on vacations, or otherwise "change the scenery." Such a procedure is not a panacea for mental illness. Only too often the fault lies with the patient himself and not in his environment. He cannot leave his personality at home but must take it with him wherever he goes.

Do not say "there is nothing wrong with you, it's just your nerves" or "your imagination." Some patients become infuriated; others feel discouraged because being ill "just with your nerves" implies that nothing can be done or that their physician believes that they are not really ill. Other patients feel that such an explanation is neither an adequate nor a satisfactory solution of their problem.

Do not be careless in making diagnoses, especially involving vital organs such as the heart or concerning diseases which are associated in the lay mind with a poor outlook. People have become chronic invalids or severely "neurotic" because of careless diagnoses which later were not substantiated. Of course, in the presence of real organic pathology a nicety of judgment is required to decide just how much to tell the patient.

Do not give the patient the impression that you believe he is malingering or that he is not ill. Functional pains and symptoms are just as real and incapacitating as are the organic. Although it may appear superficially from the symptoms that the patient is attempting to escape from an unpleasant situation, we must remember that in most cases such behavior is not performed consciously or with intent to deceive.

Do not depend solely upon suggestion in treatment. Such therapy makes no attempt to understand the fundamental cause of symptoms. Only too often, after an apparent cure, there is a fresh outbreak of symptoms and new suggestive treatment is necessary.

Do not forget that sexual impotence may be organic and that diabetes mellitus and tabes dorsalis are sometimes the causes.

Do not attempt merely to argue or reason a patient out of his symptoms or beliefs. Make a geniune effort to discover the underlying causes. Family, relatives, friends, even other physicians have probably been pursuing the former course. Your efforts in the latter direction may be such a novelty as to be productive of striking benefits. The majority of patients will properly appraise your aims and coöperate wholeheartedly.

Do not fail to take advantages of opportunities for the prevention of minor mental symptoms. Most people are afraid, even terrified, not only at the prospect of a major operation, which is readily understandable, but of such relatively simple procedures as spinal punctures, blood counts, intravenous punctures, etc. A few kind words of assurance, a simple explanation of what to expect, and what is to be done, often works wonders. What is even more important is that the patient will be grateful and much more coöperative.

Do not commit the unforgivable sin of telling the patient that there is nothing wrong and then prescribing some medicine. The average person is quite bewildered by such a contradiction and is unable to explain it satisfactorily. Even worse, he may be left with the belief that his physician does not have a real appreciation of the difficulties which compelled him to seek help and for this reason may completely lose confidence in the physician. Many of this group of patients resort to irregular practitioners.

Do not be too prone to make decisions for your patients or offer advice until you are in possession of sufficient pertinent facts and have given them proper consideration. In many instances your puzzled or uncertain patient, if he is encouraged to talk and his thoughts guided into proper channels, is capable of making his own decisions. It is much better therapy to teach him to think clearly, to arrive at logical conclusions, and then to carry out his decisions.

The above brief paragraphs contain nothing new or startling. Every one is familiar with their contents. Many physicians can cite examples and personal experiences applicable to each admonition. The value and application of the conclusions is apparent. They are written only as a reminder that errors are sometimes committed. An occasional reminder focuses one's attention upon his mistakes and may suggest the advisability of a change in therapeutic approaches.

SYMPATHECTOMY FOR CONTROL OF PAIN*

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Galen made the first reference to the paravertebral ganglia and thought that they were the reinforcers of the nerves. Vesalius made the first dissections and diagrams of the ganglionated trunks and some of the peripheral plexuses. Since the sixteenth century, there was a gradual accumulation of facts regarding the sympathetic nervous system until about two decades ago when interest became intensified by surgical investigations.

Alexander in 1889 attempted to treat epilepsy by excising the superior cervical ganglia. During the last decade of the nineteenth century, Jaboulay and Jonnesco each repeated this operation in an attempt to cure epilepsy and exophthalmic goiter respectively. Since their results were unsatisfactory, there followed a lull in interest. Leriche[1] in 1913 performed periarterial sympathectomy for causalgia, and Jonnesco[2] in 1916 excised the left superior cervical ganglion to relieve the pain of angina pectoris, but it was not until 1924 that general interest in surgery of the sympathetic nervous system was stimulated by the reports of Royle.[3]

Anatomical Considerations

The cortical representation of the sympathetic nervous system is in the premotor area, and the paraventricular nuclei of the diencephalon preside over it. The efferent fibers descend in the cord near the pyramidal tracts and make synapses in the lateral horns of the gray matter with neurons that pass out through the anterior roots and white rami communicantes from the first thoracic to the second lumbar segments to end in the paravertebral ganglia where connections are made with the postganglionic neurons. The postganglionic fibers communicate with the viscera or the structures of respective somatic segments. The viscerosensory fibers which are medullated are distributed with the efferent fibers. They pass through the gray and white rami communicantes but have their trophic centers in the posterior root ganglia. The neurons of the second order enter the cord through the posterior roots, cross eventually to the opposite side, and ascend mesially to the somatic spinothalamic tract. There are criss-cross fibers which connect the tract on each side and which do not extend higher than the lower cervical region of the cord. For this reason, a bilateral chordotomy with incisions extending to the gray matter is required to eliminate visceral pain as demonstrated by Foerster[4] and Davis.[5] The viscerospinothalamic tract appears to terminate in a separate nucleus of the thalamus to that of the somatic spinothalamic tract, or a separate area of the same nucleus.

The paravertebral ganglia on each side are connected by a trunk and extend from the base of the skull to the ganglion impar of the coccyx. They are united with the peripheral somatic nerves by the gray rami communicantes.

The sympathetic nerves enter the skull by two routes: (a) From the two stellate ganglia ascending the vertebral and basilar arteries, and (b) from the superior cervical ganglion ascending the internal and external carotid arteries. The cardiac and aortic nerves are formed by detachments from the cervical and upper 4 or 5 thoracic ganglia; the splanchnic nerves, by detachments from the fifth to the twelfth thoracic ganglia.

The superior hypogastric plexus which innervates the lower third of each ureter and the pelvic viscera, excluding the ovaries, is formed by a central root originating from the intermesenteric plexus, and two lateral roots formed by branches from the first and second lumbar ganglia on each side, respectively. The plexus receives additional branches bilaterally from the third and fourth lumbar ganglia and divides at the level of the promontory of the sacrum to form the hypogastric nerves which terminate in the hypogastric ganglia, respectively.

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* Read before the Section on Neurology and Psychiatry of the Society, December 2, 1937.

VISCERAL PAIN

It was formerly thought that the viscera had no sensation of pain and that distress from a diseased viscus was caused by a pull on the somatic nerves of the parietal peritoneum or by some type of impulses traveling over the splanchnic nerves producing an irritable focus in the segmental levels of the spinal cord. The latter idea accounts for the referred pain, but it does not account for direct pain. Schrager and Ivy,[6] and Davis, Pollock and Stone[7] have demonstrated that distention of a hollow viscus is painful. Moore and Singleton[8] have produced pain by injecting sodium iodide into visceral arteries. Odermatt[9] has produced pain by distending the larger arteries. Sutton and Lueth,[10] and White[11] have shown that cardiac pain results from anoxemia of the myocardium. Weiss and Davis[12] discovered that novocainization of the skin area eliminates referred pain but that there still persisted a dull pain referred to the region of the viscus. Davis and Pollock[13] produced pain of the side of the face by stimulating the superior cervical ganglion, and since this ganglion is void of afferent neurons, they concluded that a metabolite is liberated by stimulating the efferent sympathetic nerves which in turn stimulate the endings of the spinal sensory nerves. Thus the rationale for sympathectomy for relief of pain has the following basis:

1. Sensory neurons accompany efferent sympathetic neurons.
2. Impulses traveling over the visceral nerves produce an irritable focus in the spinal cord which gives rise to pain referred over the corresponding cerebrospinal nerves.
3. By means of axon reflexes a metabolite is produced that causes a painful stimulation of the cutaneous sensory nerves.

PAINFUL CONDITIONS FOR WHICH SYMPATHECTOMY IS INDICATED

MIGRAINE

The relief of migraine by some form of sympathectomy has been obtained by Dandy,[14] Love and Adson,[15] Craig,[16] Jonnesco,[2] and Mixter and White.[17] Those patients who show evidence of vasospasm are the ones who are most benefited by interrupting the sympathetic innervation to the head. In dealing with these patients, one should always observe the results obtained by injecting novocaine about the stellate ganglia before proceeding to the more radical method of permanent sympathectomy.

ATYPICAL FACIAL NEURALGIA

Mixter and White,[17] Flothow,[18] and Reichert[19] have secured relief in patients suffering with atypical facial pain by cervico-thoracic sympathectomy or injection of the stellate ganglia with alcohol. Harris[20] thinks that the pain of tic douloureux is sympathetic in origin. He cited a case of a young unmarried girl on whom he had injected the gasserian ganglion without relief. He injected the stellate ganglion with relief of pain and effected a permanent cure by excising this ganglion. In 1935 I saw a white man, 61 years of age, who had developed severe pain in the left side of the face following radium treatment for carcinoma of the tongue about 3 years previously. He had already had a section of the sensory root of the fifth cranial nerve and later an avulsion of the second and third branches of this nerve without relief. An injection of the left stellate ganglion relieved the pain.

In these patients suffering with pain of the face, one can evaluate fairly accurately beforehand the results that will be obtained by permanent sympathectomy by injecting the stellate ganglion with novocaine.

ANGINA PECTORIS

Jonnesco[2] excised the superior ganglia in 1916 of a patient suffering with angina pectoris with brilliant results. Since then many surgeons have performed some type of sympathectomy for this condition with average successful results in about 50 per cent of the cases. In 1927, Braeucker,[21] Jonnesco and Enarchesco,[22] and later Kuntz and Morehouse[23] discovered cardiac nerves detached from the upper four or five thoracic ganglia in addition to the superior cardiac nerves. As a result of this discovery, it is evident that destruction of the cervical or stellate ganglia is an incomplete operation. Injection of the upper four thoracic ganglia bilaterally with alcohol will always afford relief if the ganglia are destroyed.

PAIN OF THE ABDOMINAL VISCERA

Alcoholic injection of the proper paravertebral ganglia will invariably give relief to abdominal visceral pain. Alvarez[24] recommends the giving of a high spinal anesthesia in some instances and observing the level of skin anesthesia at the instant the pain disappears in order to determine the correct segmental level. He states that if the pain still persists after spinal anesthesia, the patient is probably psychoneurotic.

Pain resulting from carcinoma of the esophagus, stomach, and biliary tract is especially amenable to paravertebral injection of the ganglia. Gastric crises of tabes offers a more difficult problem, but Smithwick[25] and White[11] have each reported excellent results following interruption of the sympathetic nerves by injection of the eighth to the eleventh thoracic ganglia bilaterally.

PAINFUL TRAUMATIC ARTHRITIS

Fontaine and Herrmann[23] have reported 22 cases of painful traumatic arthritis treated by sympathectomy with encouraging results. Scott[27] also has reported good results. In 1934 I performed a periarterial sympathectomy on the brachial artery of a young colored man who had been suffering with painful traumatic arthritis of the right hand for 10 months. The hand was cold, slightly edematous, and painful to pressure. The X-ray studies revealed mild osteoporosis. The result was excellent, and the patient returned to work 30 days after the operation. It would appear that periarterial sympathectomy is adequate for this condition.

PAIN IN THE PELVIC VISCERA

The sensory nerves to the vesical mucosa are furnished by the parasympathetic nervous system. Therefore all sensation of pain of the bladder cannot be eliminated by sympathectomy but only the suprapubic pain normally present when the bladder is overdistended and the crushing type of pain originating in the vesical musculature. I[28] have performed presacral sympathectomy for interstitial cystitis and tuberculous cystitis with gratifying results. However, the operations performed for inoperable cancer have not eliminated pain adequately to warrant the procedure. Learmonth[29] has completely eliminated pain in cases of inoperable malignant lesions of the bladder by destroying the sympathetic and parasympathetic innervations, but this procedure produces a typical "cord bladder," since the micturition reflex and the innervation to the detrusor muscle are furnished by the parasympathetic nerves.

Presacral sympathectomy performed on patients suffering with severe primary dysmenorrhea who have not been relieved by more conservative therapy has been almost uniformly successful in the hands of many surgeons. I have also performed this operation on 20 patients who had had multiple pelvic operations and who were suffering with vague diffuse pelvic pain, with satisfactory results in 19. Also I have done a presacral sympathectomy on a patient suffering with pelvic pain following radium treatment and on one suffering with inoperable carcinoma of the cervix and uterus, with complete relief of the former pain in each instance.

CAUSALGIA AND AMPUTATION-STUMP NEURALGIA

There are no two conditions that are more difficult to treat than causalgia and amputation-stump neuralgia. White[30] states that a low threshold for pain and a personality poorly equipped to fight the battles of life almost invariably accompany these two conditions. Weir Mitchell[31] gave one of the best descriptions of causalgia and observed that any emotion caused exacerbation of the pain. Thus he incriminated unknowingly the sympathetic nervous system as playing a part in the production of the pain. Spurling,[32] Flothow,[18] and others have obtained permanent relief of pain in this condition by destruction of the sympathetic ganglia. Schneider and Fulcher[33] have obtained permanent relief in one patient suffering with severe causalgia of the right hand by excising the stellate, second, third, and fourth thoracic ganglia on the right. If temporary interruption of the sympathetic nerves by the injection of novocaine gives relief, in either causalgia or amputation-stump neuralgia, one is justified in doing a permanent sympathectomy with assurance that the benefit will be lasting.

CONCLUSION

Sympathectomy for relief of pain is an important addition to the surgical armamentarium. The use of local anesthesia is invaluable to aid one to obtain a correct diagnosis, to select the correct segmental levels of the regional fibers, and to evaluate beforehand the merits of a permanent sympathectomy. When it is desirable and indicated, almost all forms of visceral pain and many cases of causalgia, amputation-stump neuralgia, and atypical facial neuralgia can be relieved by some form of sympathectomy.

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Discussion on the Clinical Value of the Tomograph.—There is no department in medicine which owes more to the science of radiology than that which deals with diseases of the chest. Despite the fact that the chest physician has at least four time-honoured methods of eliciting physical signs at his command, it has to be recognized that the X-ray film can convey much more than any individual sign or group of signs can discover. . . .

Most . . . are, no doubt, familiar with the radiological findings in a case of thoracoplasty, where the operation has been performed some months previously. There is, perhaps, no radiogram more difficult to interpret, for in such cases the amount of lung tissue available for clear and distinct inspection is frequently minimal and the shadows shown by the distorted ribs, new bone formation, and the collapsed lung itself, add greatly to our difficulties in interpretation. Similarly, it is impossible by the usual radiological methods to give an opinion of the state of the underlying lung in many cases of pleurisy with effusion; nor has there been hitherto any reasonably sure radiological device for determining bronchial obstruction when this is due to the presence of some soft-tissue growth.

It was with a view to attempting to overcome these and other difficulties that Ziedses Des Plantes (1932), Grossmann (1935a), and others, were led to introduce tomography, by which is meant the "sectioning" of the organ to be examined by X-rays, so that it becomes possible, firstly to analyse the organ in sections or slices, and then to give a synthesized picture of its structure. . . .

It would appear that tomography has made unusual strides in a short space of time, and, as was to be expected, terminological difficulties have arisen. Each pioneer—in accordance with his preference for Latin or Greek—has chosen his pet title, and collectively these names have added something more to the chaos with which much medical nomenclature is shrouded. For example, we have planigraphy, stratigraphy, laminagraphy, and tomography, but of these "tomography" has at least the merit of sound and constant etymology, and it is to be hoped that it will remain in use—in this country,* at any rate—to indicate the procedure by which radiological sections of an organ may be taken.

It might be inferred from what I have said that tomography is limited to investigations in lung diseases. This is not so. There are many fields open for research in this subject, . . .

Abstract of article by J. B. MCDOUGALL, M.D., *Proceedings of the Royal Society of Medicine, February, 1938, p. 379.*

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* England, Ed.

THE TREATMENT OF ACUTE GASTRIC HEMORRHAGE*

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The treatment of acute gastric hemorrhage divides itself into two parts, immediate and follow-up (or convalescent) treatment.

Immediate treatment is directed toward the relief of shock which is present to a greater or less degree in all cases. There is general agreement as to treatment in this initial period of shock. It centers on complete rest and the application of external heat. Complete rest is obtained by placing the patient in bed and keeping him quiet and relaxed by the use of morphine hypodermatically or the employment of one of the barbiturates. In this connection Bulmer[1] and others have expressed doubts as to the wisdom of the present use of morphine in these cases, on the basis that excessive immobilization of the stomach may be definitely undesirable. They prefer that rest be promoted in these patients by the administration of barbiturates or sedatives of a similar type. With this view I strongly disagree. Both from long clinical experience as well as from physiological and pharmacological aspects, morphine remains the drug of choice in just such cases as these. Little need be said about the application of external heat except that whatever method is most practical and convenient under the circumstances may be employed. This period of shock is ordinarily short lived, from 4 to 24 or at most 36 hours. It is customary to apply an ice cap over the epigastrium in these cases. The value of this procedure is difficult to gauge.

It is in the second or convalescent period that considerable difference of expert medical opinion exists concerning proper treatment.

The factors entering the problem at this stage are four: food, transfusions or other parenteral fluid, drugs, and surgery.

With older methods of treatment it was customary to fast patients who had bled severely, for a period of 3 days or often longer. Individual results appeared good in general, but on careful analysis of larger series it was found that a fairly high mortality rate existed, probably close to 15 or 20 per cent. This was apparently too great and when the use of blood transfusions became common it was thought for a time that the greatest need had been satisfied. That transfusions did not settle the matter favorably, however, is well shown by statistics on recent series of cases reported. Hinton[2] reported a fatal outcome in 20 per cent of those patients having severe gross hemorrhage; Bulmer[1] in 10 per cent; Chiesman[3] in 25 per cent; Allen and Benedict[4] in 14 per cent; Aitken[5] in 11 per cent; Tidy[6] in 19 per cent; Davies and Nevin[7] in 21 per cent; and Burger and Hartfall[8] in 22 per cent. It is probably conservative to say that gross peptic hemorrhage today carries a general mortality of from 5 to 10 per cent.

When we consider the statistics of Rivers and Wilbur[9] that more than 75 per cent of patients with hematemesis have peptic ulcers, about 12 per cent carcinoma and the remainder some other cause to account for the bleeding, these high mortality figures become somewhat more startling.

Most of the fatalities seem to occur rather late, perhaps a week or longer after the initial hemorrhage. And as time goes on it becomes more and more apparent that the primary cause of death in these cases is from the effects of starvation, dehydration and anemia. It is well known that these factors form a mortal triad leading directly to serious liver, kidney and constitutional complications. To combat these factors much earlier feeding has been attempted, apparently with definitely good results. Meulengracht[10] of Copenhagen has been the chief recent advocate of early feeding. He reports 251 patients with hemorrhage who were liberally fed from the first day with a mortality of only 1 per cent. In this connection it will be recalled that the old Lenhartz treatment for bleeding ulcer involved the feeding of raw, scraped or ground beef in rather liberal quantities from the first day. His good results apparently have been largely overlooked until recently.

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* Read before the Section on Gastroenterology of the Society, December 13, 1937.

The exact time to start feeding will of course vary in individual cases, but in general it seems wise to attempt feeding just as early as possible. The diet should be broad and complete, but of course perfectly bland in character and in a soft, finely divided form. If there appears to have been some direct dietary deficiency, more especially in vitamin C, preceding the hemorrhage, it is probably a wise precaution to supply this vitamin either by mouth or by hypodermic injection. Liver injections likewise have been employed in an attempt to combat any possible deficiency condition.

There has been considerable controversy about the dangers and advantages of blood transfusion in cases of peptic hemorrhages. Sippy taught that the intravenous administration of fluids might start hemorrhage anew. Most physicians have feared that transfusions, especially large ones of 500 cc. or more might increase the systolic pressure to such an extent that further bleeding would be encouraged. On the other hand McGuire, Unger and others have questioned the benefit of small transfusions and discounted the dangers of the larger ones, claiming that such large transfusions not only do not raise the blood pressure but rather tend to lower it and also promote better clotting of the blood. On the other hand, Christensen (Scandanavia) said that in the past 5 years the mortality was almost twice that of the previous 5 years, despite the much wider use of blood transfusion. He therefore expressed the belief that transfusions have not only not reduced the number of deaths from massive hemorrhage but have even contributed to its increase.

The dangers of dehydration have been clearly shown by the work of Meyler (Holland) as well as by others who have demonstrated that enormous toxic destruction of proteins occurs after massive hemorrhage, with an accumulation of nitrogenous end-products which, unless the condition of dehydration is speedily corrected and balanced feeding instituted, may result in death by uremia.

Again, as has been indicated above, there is increasing evidence that the liver suffers severely in many cases of prolonged peptic ulceration and hemorrhage, so that the intravenous injection of dextrose solution as a liver protection must be duly considered.

Various drugs have been employed during this convalescent period. None however appears to have stood the test of time save the usual medical therapy employed in handling routine ulcer cases. In this connection it seems that after gross hemorrhage especially, it is unwise to run the risk of producing even a milk alkalosis because of its bad influence on an already upset metabolism and also because it appears to interfere with the absorption and utilization of iron in rebuilding the blood. Iron should be exhibited in adequate dosage in whatever form best tolerated. The latest effort in drug therapy for peptic hemorrhage is a report of 21 cases by Woldman[11] who uses a continuous drop of colloidal aluminum hydroxide with reported good results.

With few exceptions indications for surgery rarely exist and then not during or immediately after an acute hemorrhage. Surgery seems indicated only in repeated, recurrent hemorrhage and in persistent oozing which fails to respond to proper medical care. Kruse[12] says that with few exceptions, indications for surgery exist chiefly in the arteriosclerotic patient with recurrent or persistent hemorrhage and in the person with a deeply penetrating ulcer on the posterior wall of the duodenum which erodes through a large arterial branch.

To summarize briefly, treatment of acute gastric hemorrhage may be outlined as follows:

1. Complete bed rest with the administration of morphine and/or barbiturates, over the initial period of shock.

2. Fluids sufficient to combat dehydration containing normal electrolytes and glucose to be given orally, rectally, subcutaneously, or intravenously.

3. Blood transfusions to combat profound anemia, especially if the hemoglobin is 50 per cent or less.

4. Feedings by mouth of suitable ulcer-type diet to be started as early as possible.

5. Drugs by mouth, such as iron alone or together with some finely divided protective powder preferably one not having free alkali radicals.

In the treatment of acute gastric hemorrhage it perhaps is well to repeat an admonition which however trite, is nevertheless completely sound: treat the patient, not the disease.

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DISCUSSION

Dr. William Earl Clark.—For the initial 24 hours my experience leads me to advocate strongly nothing in the way of food or fluid for these cases but to maintain as complete rest and quiet as possible by adequate and repeated injections of morphine. Feedings may be started on the second day in most cases. The mortality figures quoted are much higher than in my own private practice. What about lavage?

Dr. Fred A. J. Geier.—It will be of interest I am sure to give you recent observations by gastroscopy of the effect of external applications of heat and cold to the epigastrium. Heat applied to the belly during gastroscopy is seen to produce a definite relaxation of the pylorus, while the application of cold is followed by definite pyloric closure.

Dr. A. Camp Stanley.—How long before you start feeding solid food to these patients, such as baked potato?

Dr. Ballinger, in closing.—The restriction of treatment to bed rest and repeated injections of morphine in these cases over the initial 24-hour period, which corresponds in a general way to the period of shock, has sound clinical foundation and corresponds with my own personal management. I was as greatly surprised by the high mortality figures given from the literature as is Dr. Clark. In private practice it certainly seems that a 1 per cent mortality is closer to fact. As to lavage, I consider it an unnecessary and potentially dangerous procedure. Its use should be limited to those patients who continue to have active nausea and vomiting, the vomitus containing old blood and blood clots. Here a lavage gently done may clean the stomach of its residue and stop the straining and activity of nausea and vomiting. Thank you, Dr. Geier, for bringing out such a definite and practical observation on the effect of the external application of heat and cold to the belly. The closing of the pylorus and increasing of circular smooth muscle tone is one of the benefits to my mind of the use of morphine in these cases. If an ice cap reinforces this action it appears to have definite merit. An ice cap also acts to prevent unnecessary body twisting and turning by the patient in bed. In answer to Dr. Stanley's query, solid food, such as baked potato, is given almost at once, ordinarily on the second or third day. The chief limitations relative to diet are first its amount, feedings being frequent but small in quantity, and second the bland character of the food which should be free from any roughness or harshness or irritant either physical or chemical.

Vesical Neck Obstruction in Children.—Vesical neck obstruction in children is a definite clinical entity, not new, but merits repetition and emphasis to the general profession if renal function is to be conserved. On account of the existing pyuria this condition is commonly unrecognized and treated for months or years as so-called chronic pyelitis. Pyuria does not always mean pyelitis, and this information should be more generally disseminated. An appropriate term would be chronic pyuria until complete urologic investigation reveals the true nature of the underlying lesion.

Obstructions of the vesical neck are either mechanical or neuromuscular. Lesions most frequently encountered are congenital bars, contractures of the vesical neck, calculi, diverticula, and folds of mucous membrane. Many of these patients are brought to the physician because they have difficulty in voiding or because they are passing turbid urine frequently. In some there is enuresis, probably due to overflow; in others there may be dribbling of urine. Many of these patients, despite the obstruction, seem to pass a good stream; but physical examination discloses a hypogastric mass which represents the residual urine in the bladder. The presence of infection causes the symptoms to become more marked, and these children deteriorate in health. The bladder undergoes hypertrophy trying to compensate for the obstruction. Residual urine increases, and incompetence of the ureteral openings develops with dilatation of the ureters and the development of hydroureteronephrosis. This may be unilateral but as a rule is bilateral. When the infection ascends from the bladder a bilateral infected renal condition develops, and it is in this stage that most of the patients present themselves to the urologists for investigation. . . .

Conclusions. 1. Vesical neck obstruction in children is commonly unrecognized because thorough urologic studies are too long delayed.

2. Much valuable time is lost by treating these cases for months or years for so-called chronic pyelitis.

3. Infection follows obstruction sooner or later so that early discovery of vesical neck obstruction with prompt correction before upper urinary tract pathology becomes irreparable is of the utmost importance.

Abstract of article by PHILIP S. ROSENBLUM, M.D., Philadelphia, *Pennsylvania Medical Journal, March, 1938, p. 476.*

A COMPARISON OF THE INJECTION AND OPERATIVE TREATMENTS OF HERNIA*

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A hernia is the abnormal protrusion of a viscus through its surrounding parietes, the protruding part being covered by a sac. The objectives in the cure of hernia are:

1. The replacement of the protruding viscus.
2. The removal or obliteration of the hernial sac.
3. The narrowing or closure of the parietal defect.

Both the operative and injection treatments of hernia are aimed at these objectives. At operation the protruding viscus is replaced, the sac is excised and the defect is narrowed or closed by the apposition of muscle and fascial layers with sutures. The injection method aims to maintain reduction of the protruding viscus by the use of a truss, to obliterate the sac and to narrow or close the parietal defect by the production of scar tissue.

The injection treatment of hernia dates back to 1835 when Velpeau observed a cure following the accidental introduction of iodine into the inguinal canal during the attempted injection of a hydrocele. He later experimentally treated herniae with iodine injections. In the next few years following, Joseph Pancoast of Philadelphia treated 13 cases of inguinal hernia by injecting Lugol's solution into the canal. Neither Velpeau nor Pancoast continued with this form of therapy. George Heaton of Boston in 1843 took up the injection method and in 1877 published a book on the subject. Because Heaton would not disclose his secret formula he fell into disrepute with the American Medical Association and was considered a charlatan. Joseph Warren of Boston, a disciple of Heaton, admitted that the latter's claims were exaggerated, but Warren himself obtained hernial cures with injections and described the method in his textbook published in 1881. In 1875 Gustav Schwalbe of Germany reported hernial cures following the injection of 70 per cent alcohol. Theodor Billroth, evidently recognizing the possibilities of the injection treatment, wrote in 1880 that the radical operation for hernia would be obviated if someone could obtain a solution to cause artificial proliferation of tissue. Mayer of Detroit, who used zinc sulphate and phenol solution, is credited with the modernization of the injection method about 1900. The injection treatment held the attention of only a few investigators and workers. The complications aroused fears. The type of questionable medical men practicing injections with unscientific methods promoted criticism. The poor results from paraffin injections, which became popular in the latter part of the nineteenth century, brought disfavor. The profession became prejudiced and considered the injection treatment a quackery procedure.

Prior to 1874 when Lister acknowledged the value of Pasteur's work and introduced antiseptic surgery, operations for hernia were hazardous and confined mostly to cases of strangulation. In 1889 Edoardo Bassini and William S. Halsted simultaneously devised the modern hernia operation which reigns in favor today in spite of its numerous modifications.

Because it has been estimated there are in the United States five to six million cases of hernia that have not been operated upon, many of which are poor surgical risks, because of the apparently high percentage of recurrences after operation, because of the important place herniae have assumed in compensation medicine, because of the economic factors of expense and period of disability incident to operation, because of the fears and hazards of surgery, and probably for other reasons, the injection treatment has in the last few years received renewed interest.

Today nearly all physicians recognize and advise the operative treatment for hernia. Today the injection method has its proponents and opponents. After studying the subject one finds that considerable recent work has been accomplished on the injection treatment, new solutions have been used, the technic has been improved, experimental work has been done, the indications, contraindications and complications have been listed, and cures have been reported by recognized surgeons. The injection method, therefore, should not be dismissed without examination.

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* Read before the Medical Arts Society of the District of Columbia, December 9, 1937.

Many solutions have been employed and most of them depend on herbal extracts and tinctures combined with phenol and alcohol. The solutions have been classified as (1) acids in alcoholic solution or caustic salts (tannic acid, phenol, and zinc sulphate), or (2) mild soap solutions. The ideal solution which some claim has not yet been found, should be painless, noninjurious to tissues, nontoxic if injected into a vein or into the peritoneum, produce no systemic reactions, cause a minimum of exudate, and produce maximum proliferation of tissue and a firm scar.

The technic of injection is a definite procedure to be carefully followed and used by one who is competent and who has a detailed knowledge of hernial anatomy. The constant use of an accurately fitting truss that maintains complete reduction of the hernia is essential. The truss is worn sufficiently long to insure its efficiency before injections are begun. The Trendelenburg position is employed, the skin aseptically prepared, and novocaine used if desired. The finger is placed in the hernial defect to guide the needle. The needle is inserted in such a direction as to lessen its chance of perforating the peritoneum. The resistance of the fascial layers helps to determine the depth the needle is inserted. The plunger of the syringe is withdrawn to insure the needle has not entered a vein or the peritoneum. The injection is made slowly and warning symptoms are inquired for. Other locations are used for subsequent injections. The dosage, frequency and number of injections are carefully determined.

The technic of the operative treatment is generally well known and need not be described here, but it too is a definite procedure to be practiced by one who is competent and who has a detailed knowledge of hernial anatomy.

For either method of treatment the selection of a suitable case is important. Operation may be indicated when injection is inadvisable and injection used when surgery is not applicable. Injection is indicated only in cases of reducible hernia and those capable of being retained with a properly fitting truss. Operation and not injection is advised in cases of irreducible hernia, incisional or ventral hernia with multiple openings, sliding hernia, hernia with large defects, and those complicated with strangulation or incarceration. The indirect and direct inguinal and umbilical herniae are best suited for injection, whereas operation may be used in any anatomical variety. An associated undescended testis calls for operation, and in obesity either method is hazardous. The injection treatment is better indicated in the extremes of age, in recurrent hernia and in poor surgical risks. Many patients objecting to surgery because of time and expense may be injected advantageously.

A number of conditions contraindicate either form of treatment—acute diseases, local skin diseases, serious organic or chronic diseases, such as blood dyscrasias, hemophilia, tuberculosis, malignant lesions, hyperthryoidism, diabetes not under control, asthma, bronchitis, chronic cough due to any cause, constipation, urinary retention, active venereal disease, psychoses, low intelligence, and lack of coöperation.

The advantages of the injection treatment are that it is (1) an ambulatory method, (2) more economic from the standpoints of both expense and loss of time from work, (3) avoids the serious complications of surgery, (4) is less painful, and (5) is applicable to patients in whom surgery is contraindicated.

Operation is advantageous because it is (1) a more scientific and accurate form of treatment, (2) definitely removes the hernial sac, (3) successful as a result of the reapproximation of anatomical structures rather than scar tissue, (4) affords transplantation of the cord if desired, (5) less likely to do damage to adjacent structures, (6) avoids a long course of treatments and the use of a truss, and (7) gives better control of the patient during the treatment.

The objections to the injection method are enumerated as follows: (1) It is a less scientific or blind procedure; (2) it necessitates the wearing of a truss which often produces local irritation; (3) it does not remove the hernial sac nor transplant the cord; (4) its success depends on scar tissue which may stretch or absorb; (5) the treatment is prolonged and the number of injections required is uncertain; (6) a change of address, sickness, accident or lack of funds may cause inadequate or prolonged treatment; and (7) the patient is apt to make his own decision as to when his hernia is cured.

The operative treatment has its disadvantages: (1) It requires more expense; (2) it produces a long period of loss of earning power; (3) there is a possibility of mortality, though low; and (4) it is not applicable to the aged or those who are poor surgical risks.

Both injection and operation are objected to because of (1) recurrences, (2) local reaction, (3) the possibility of complications, which are said to be greater with operation, and (4) the possibility of injury to adjacent structures, which may be greater in the injection method.

Most of the mentioned complications and sequelae of the injection treatment may also follow operation. Injury to nerves, blood vessels, peritoneum, spermatic cord, intestine, bladder, etc., is probably more likely to accompany the injection method. Infection and abscesses, hematomata, thrombosis and embolism, thrombophlebitis, swelling of the spermatic cord, testicular atrophy, impotence, sterility, hydrocele, orchitis, and epididymitis may complicate either method. The injection treatment may be followed by chemical peritonitis, sloughs and necrosis, ulceration of the skin from the truss, dermatitis, or hernial strangulation. On the other hand, operation may be complicated by respiratory infections, such as bronchitis and pneumonia, renal insufficiency or difficulty of micturition, and other postoperative complications, such as nausea and vomiting, shock, intestinal distention, sweating, etc.

Hernial cures are reported with both forms of treatment. The difficulties of obtaining accurate hernial statistics are recognized and are numerous. Therefore, the percentage of good results and recurrences is variously reported. It is generally believed that the number of operative recurrences is greater than is reported. The failures with either method may be due to (1) factors within our control, such as improper selection of cases, improper selection of the form of treatment, and poor technic, (2) factors beyond our control, such as age, obesity, atonic muscles and fascias, and failure of coöperation of the patient.

Experimentally it has been proved that injection produces a slight necrosis followed by an invasion of polymorphonuclear and round cells and later of fibroblasts, and the formation of fibrous and scar tissue. Nelson of Minneapolis showed that the fibroblasts invaded 8 days after injection and that dense scar tissue was formed in 42 days. In 1929 Hall and Fraser of New York found the reaction to a tannic acid solution to consist of proliferation of endothelial and connective tissue cells with large mononuclear phagocytes and foreign-body giant cells. They stated that experience with foreign-body granulomas in general proved that this type of tissue reaction did not lead to malignant neoplasm to any greater extent than any other form of chronic irritation. Bratrud[1] of Minneapolis stated in 1937 that the phenol-thuja solution, compared to others, produces earlier necrosis but denser and tougher fibroblastic tissue.

McKinney[2] of Minneapolis reported, in 1937, 300 cases injected over a period of 3½ years with 83 per cent cures. Rice,[3] also of Minneapolis, stated in 1937 that in several instances it was found, at a later operation for appendicitis, that the hernial sac had been obliterated by previous injections. Rice and Larson[4] also reported that at operation in 30 cases, previously injected, the spermatic cord was perfectly normal. In 1936 Harris and White[5] of San Francisco stated that injections into the peritoneal cavity of guinea-pigs produced no pathology as proved afterwards by negative autopsy findings on the animals.

In 1936 Kelly, Pratt and Palmer[6] of Detroit, using the common solutions on dogs, produced fibroblastic proliferation in 10 to 20 days, but they reported that it had almost disappeared in 50 days and in 100 days had completely disappeared. They concluded that the proper solution had not been found. Burdick and Coley[7] of New York stated in 1937 that in 8 cases, operated upon sufficiently long after injections had failed to permit subsidence of proliferative changes, there was no clinical nor microscopic evidence of a strong bulwark of built-up scar tissue as claimed to result from injection. They have abandoned the injection treatment until statistics are forthcoming that point to a higher curability of hernia by this method.

One finds in the recent literature other authors and investigators both approving and disapproving the use of the injection treatment. Those advocating the method, however, outnumber those objecting to its use. Its supporters do not intend that the injection method supplant operation, but reason that it has a definite place in the treatment of hernia. Wangensteen[8] well summarized the situation by saying that medicine has come to recognize the superiority of trial over reason, that prejudices cannot delay the march of progress, and that time will ultimately judge impartially the merits of the injection method of treating hernia.

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A CASE OF PNEUMOCOCCAL PERITONITIS TREATED WITH PRONTYLIN

W. Warren Sager, M.D., *Associate in Surgery, George Washington University School of Medicine;* and William Raffel, M.D., *Washington*

A female colored child, aged 3 years, was admitted to Children's Hospital on June 23, 1937, because of a very severe generalized abdominal pain that had developed 30 hours previous to admission. Two doses of castor oil had been followed immediately by vomiting, which did not persist, and a severe diarrhea. During the first 3 hours after admission to the hospital 4 small yellow watery stools were passed. The child appeared to be of average weight, acutely ill, and very toxic. Examination of the oral cavity revealed cryptic tonsils that were slightly injected. Generalized abdominal rigidity and tenderness were present. Both the rigidity and tenderness were more marked in the right lower quadrant. The temperature was 102.8°F., the pulse rate was 102 per minute, and the respiratory rate was 45 per minute. A white blood count revealed 31,600 cells per cu. mm. of blood, of which 2 per cent were lymphocytes, 1 per cent endothelial cells, 70 per cent lobulated polymorphonuclear neutrophiles, 26 per cent band forms, and 1 per cent young forms. The specimen of urine obtained was so small as to prevent examination for specific gravity or the presence of acetone. It did not, however, contain albumen or sugar, and an occasional white blood cell was seen on microscopic examination, as were numerous amorphous urates. Immediate subcutaneous injection of 250 cc. of 5 per cent glucose with Hartman's solution was given. A diagnosis of probable perforation of an acute appendicitis was made. Pneumococcal peritonitis was mentioned only as a remote possibility. The persistent diarrhea was, we believed, the result of the 2 doses of castor oil, and the overwhelming toxemia was explained by peritonitis, dehydration, and diarrhea. It is interesting to note that, as pointed out by Mathieu, the facies was more like that of a child suffering from septicemia than one suffering from peritonitis.

Immediately following the giving of subcutaneous fluids operation was performed under gas anesthesia. A McBurney incision was made. On opening the peritoneal cavity a small quantity of pus was found. The appendix showed periappendiceal inflammation, and evidence of severe peritonitis was present over all the loops of small and large bowel seen. A diagnosis of probable pneumococcal peritonitis was made, a smear made of the pus, and the abdomen closed without drainage. It was felt that a drain would be useless in the presence of so little pus and that the injury done by the drains would more than offset any possible advantage.

On returning the patient to the ward from the operating room, 150 cc. of 5 per cent glucose with Hartman's solution was given subcutaneously. Sixty grains of Prontylin was given in 6 doses with a like amount of sodium bicarbonate during the first 24 hours. Twenty grains of Prontylin was given during the second 24 hours in 3 doses, accompanied as before with a similar amount of the soda. The third day 30 grains of Prontylin and 30 grains of the soda were given and repeated on the fourth day. Twenty-five grains each of the drugs mentioned were given on the fifth day. No further medication of this nature was necessary. The diarrhea was quickly controlled during the first 24 hours by the use of paregoric. Narcotics were unnecessary. Luminal was used to control restlessness and proved very effective. Water and orange juice were given by mouth as desired in addition to subcutaneous glucose solutions. A transfusion of citrated blood was given during the first 24 hours. The temperature following operation went up immediately to 104°F. during the first 24 hours and later reached a peak of 105°F. This was accompanied by a pulse rate of 160 per minute and a respiratory rate of 60 per minute. During the second 24 hours the pulse rate varied between 100 and 140 per minute, the temperature between 100°F. and 101.4°F. The leukocyte count dropped to 9,400 with 86 per cent polymorphonuclear neutrophiles and 14 per cent lymphocytes. No young forms were seen. The child's convalescence was rapid and by the sixth day the temperature was normal or nearly normal, although the pulse rate was still slightly above normal, ranging between 100 and 110 per minute. Discharge from the hospital occurred on the twentieth day. At the time of discharge the child seemed perfectly healthy and in a sufficiently good condition to send back to a poor environment. There was no evidence at any time of the formation of an abdominal abscess.

Vaginal smears were reported on June 29 as showing a rare lancet-shaped diplococcus having the morphology of pneumococci. Pus taken from the peritoneal cavity at operation showed gram-positive cocci occurring in short chains and having the morphology of pneumococci. A culture revealed these organisms to be pneumococci. Unfortunately, although an effort was made, the type could not be determined. A blood culture attempted on June 24 was sterile. No ova or parasites, streptococci, or organisms of the typhoid-dysentery groups were found on stool examination. The Wassermann and Kahn reactions of the blood were negative. The carbon dioxide combining power was 38 volumes per cent on June 4.

The above report does not prove the efficacy of the use of sulfanilamide in the treatment of pneumococcal peritonitis but strongly suggests the probability of one or more strains of this organism being susceptible to its action when they occur in the peritoneal cavity producing peritonitis. As the therapy at present available in the treatment of this disease is attended with such poor results this case suggests the use of Prontylin as an added therapeutic aid.

ABSTRACT OF PAPER READ BEFORE THE SECTION ON NEUROLOGY AND PSYCHIATRY

"Psychoanalytic Literature on Drug Addiction and Alcoholism,"* **Ralph M. Crowley, M.D.**, Rockville, Maryland.

Psychoanalytic writings on addictions have followed the general trend of analytic theory. In the early days of analysis, Freud, Abraham, Ferenczi, and Juliusburger stressed the rôles of oral erotism, infantile sexuality, pathologic jealousy and latent homosexuality. Morphine addiction was not specifically treated, although Levy in 1924 recorded some observations on its effect in 3 organically ill patients. About the same time Marx and Hartman, writing on cocaine addiction, noted particularly the homosexual trends. Not until 1926 did any analyst attempt to formulate a theory of the general problem of drug addiction. Then Rado attributed the effect of intoxicants to alimentary orgasm, and extension of the concept of oral erotism. In a later paper he likened the narcissism of addicts to that of melancholics. Following Melanie Klein's ideas of the importance of the destructive instincts, Glover, in 1932, thought addictions were a way in which these instincts were unconsciously controlled, and he felt that unconscious homosexuality was a secondary attempt at cure, rather than a primary etiological factor. Although Rado, in a second paper in 1933, did not modify his original theory, he too emphasized the destructive factors in bringing up the problem of why an addict must continue the pleasure effect, even though it mean self-destruction. Bromberg and Shilder stressed castration and dismembering motives in alcoholic hallucinoses. Gross in 1935 stated unequivocally that the effect of drugs did not depend on the drug but on the state of psychic energy in the organism. Knight in 1937, along with the general trend of analytic theory, gave more weight to cultural and social aspects than previous writers in stressing the factor of the parental constellation. Before 1927 a few papers mentioned improvement and recoveries in cases of alcoholics, but no analyst had written specifically on methods of treatment. In 1927 Simmel described the treatment used at his Tegel Clinic, a combination of psychoanalysis and manipulation of the environment. He reported recoveries with neurotic addicts and improvement in those with underlying psychoses. Reviewed also were contributions by Glover, Fenichel, Daniels and Robbins. Wall presented results from the histories of 150 alcoholics, and advised inebriate commitment, hospital régime, and psychoanalysis if the patient was then sufficiently interested. Knight, who in 1937 reported on 70 male alcoholics, 10 of whom were analyzed, divided them into an essential type difficult to treat, and a regressive compulsive neurotic type amenable to psychotherapy. He advised definite modifications in the usual psychoanalytic procedure. The literature indicated that psychoanalysis has expanded its approach to the addictions from one in which they were regarded as caused by persistent infantile sexual traits to one in which hostility was stressed. At first psychoanalytic sessions were deemed adequate treatment. More recent papers dealt with modified psychoanalytic procedure in a planned hospital setting with gradual rehabilitation to the community at large. Such treatment is very similar to the modern psychoanalytic approach to the psychoses and the incapacitating neuroses.

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INSURANCE AND TAXES

In these times there is continual and increasing discussion of taxes, both federal and state. How often does a physician calculate the amount of tax-money which he pays to the government? How often does he consider the sums which he must spend because he is financially responsible? For example, merely because he is a professional man, the prudent physician carries liability insurance, both for his profession and for his automobile purely for financial protection.

Recently there has been occasion to examine my father's books. It is interesting to tabulate the new taxes and insurance, which did not call for expenditure in 1912. It is scarcely necessary to comment that these items listed below represent new business expenses, which did not, just 25 years ago, enter into the maintenance of a physician's office.

If the reader is interested in his own increased expenses, let him enter the proper amounts after these various items, no one of which was known in 1912:

District of Columbia Unemployment Compensation Tax
Social Security Tax
Narcotic Tax
Occupation Tax
Gross Receipts Tax
Workmen's Compensation Insurance Premium
Automobile Liability Insurance Premium
Physician's Liability Insurance Premium
Gasoline Tax
Income Tax

There is raised here no question as to the justice or reasonableness of these items of tax and insurance. Nor is there any question as to personal property taxes. The sole point is that in recent years a physician has been subject to steadily increasing expenditures in order to maintain his business.

To be sure, the income tax is paid essentially out of what remains after business expenses have been met, but as a matter of fact, after it is paid there is simply that much less money to be spent for other purposes, to be invested, or to be otherwise squandered. Or to put the matter in another way, after he has paid the income tax, a physician, like any other person, has just that much less money in his possession.

Let each of us ask himself how many days he must work each year in order to pay these items of taxes and insurance which arise directly as business expenses.

"C."

CONSTRUCTIVE COÖPERATION

Coöperation is attainable. He who would elicit coöperation must divest himself of suspicion, brush the chips off his shoulder and show himself always ready to go a little more than half way in coöperative endeavor. A notable example of coöperation is afforded by the present joint endeavor by representatives of the Medical Society of the District of Columbia, the Washington Gynecological Society, the District of Columbia Health Department, and the Children's Bureau of the United States Department of Labor. Pursuant to authorization and instructions from their parent bodies, these representatives have been working together in a series of studies designed to find out the facts relating to mortality in early life, still-births, and maternal mortality in this City. In addition to the agencies conducting the studies, grateful mention must also be made of the hearty assistance lent by the administrative and medical staffs of the local hospitals. By-products of the studies are (1) the understanding that coöperation can be attained, (2) a more tolerant appreciation of the points of view of the different agencies, and (3) as a result of these, a more active assistance from each agency toward the realization of the aims of the other agencies. The first of the reports arising out of these studies will be received at the meeting on the evening of April 13, when the Obstetrical Board will present the program of the Society, featuring on this occasion studies of still-births and neonatal mortality presented by representatives of the Children's Bureau. Leaders in pediatrics, public health, obstetrics, and pathology from the membership of the Society will open the discussion, which bids fair to be quite general in view of the recent publicity given to these subjects and the responsibility of the medical profession in them.

H. P. R.

TRANSACTIONS OF THE SOCIETY

Stated Meeting, March 2, 1938

Nominations for Elective Offices

Pursuant to Chapter VI, Article II, of the Constitution of the Society, the following nominations were made for elective offices:

For President	William J. Mallory
**For President-elect*	John Hugh Lyons William J. Stanton
**For First Vice President*	William T. Gill, Jr. R. Lomax Wells
**For Second Vice President*	David Davis Lucile Dooley
For Secretary-Treasurer	Coursen B. Conklin
For Executive Committee Members (Four to be elected.)	Raymond T. Holden Don Johnson F. X. McGovern Thomas E. Neill Paul S. Putzki John A. Reed E. Hiram Reede W. Warren Sager Henry R. Schreiber
For Compensation, Contract and Industrial Medicine Committee Members	Edgar M. McPeak Eugene A. Taylor

* One to be elected.

Membership

The following were duly elected to membership:

Active Members

Stanley Harry Berenstein, 5005 Illinois Avenue, N. W.
John Emory Bowman, 3600 Eighteenth Street, N. E.
Irving Burka, 1445 Ogden Street, N. W.
Richard Bernard Castell, 5922 Thirteenth Street, N. W.
Thomas Francis Collins, 324 H Street, N. E.
John Leonard Conley, 2420 Pennsylvania Avenue, N. W.
Cyrus Robbins Creveling, 1204 Rhode Island Avenue, N. E.
Karl Dortzbach, 4323 Wisconsin Avenue, N. W.
Maurice Russell Edmonston, 2816 P Street, N. W.
Paul Jacob Ewerhardt, 3322 McKinley Street, N. W.
James Henry Gillen, 900 Seventeenth Street, N. W.
Stewart Maxwell Grayson, 5701 Kansas Avenue, N. W.
Raymond Leslie Gregory, Howard University
John Francis Harrington, 2823 Twelfth Street, N. E.
James Patrick Kane, 1460 Minnesota Avenue, S. E.
Edward Aloysius Kelly, 2801 Pennsylvania Avenue, S. E.
William Ellis Long, 6025 Seventh Street, N. W.
Francis Nichols McDonald, 427 Seventeenth Street, N. E.
James Edward Nolan, 1869 Park Road, N. W.
George William Reeves, Stoneleigh Court
Gilbert Britt Rude, 3900 Military Road, N. W.
William George Sorrell, 616 F Street, S. W.
Paul Nealon Taylor, 2140 Pennsylvania Avenue, N. W.
Francis Dycus Threadgill, 1726 Eye Street, N. W.
James Joseph Whisman, 2400 Thirty-ninth Street, N. W.
Edwin Eugene Ziegler, 4920 Forty-fifth Street, N. W.

Associate Members

James Irving Boyd, Upper Marlboro, Md.
Aaron Deitz, 10 Spencer Street, Hyattsville, Md.
Winfred Overholser, Saint Elizabeths Hospital
William Suit Ritchie, Ritchie, Md.
Norman Clifford Shoemaker, Silver Springs, Md.
A. Elizabeth Verder (Ph.D.), 1316 New Hampshire Avenue, N. W.

Applicants for membership to be voted on in May, 1937:

For Active Membership

Herbert Abramson, George Washington University—1935
Paul Frederick Dickens, University of Nashville—1905
William Joseph P. Howard, George Washington University—1936
Maxwell Hurston, University of Maryland—1930
Morton Selwyn Kaufman, University of Louisville—1934
Thomas Francis Keliher, Georgetown University—1934
Philip Litvin, George Washington University—1929
Frederic Augustine Moretti, Georgetown University—1932
Floyd Sterling Rogers, Jr., Tulane University—1932
Alfred Julian Steinberg, Harvard University—1919
Eugene E. Willison, Indiana University—1927

For Associate Membership

David Stanford Clayman, University of Maryland—1932
Francis John Tartaglino, Georgetown University—1928

Resignations accepted:

Active Members	*Associate Member*
Guy Levis Alexander	Genevieve M. Stewart
José G. Lewis	
Edward P. McLarney	

Amendments to the Constitution Adopted

Executive Committee Personnel

1. Amend Chapter VII, Article II, as follows: Strike out Section 2 and substitute therefore the following—

Section 2. The terms of office of all members of the present Executive Committee or of any member or members thereof taking office prior to July 1, 1938, shall terminate on that date.

Section 3. At the annual meeting of the Society in May, 1938, there shall be elected four members of the Executive Committee to take office July 1, 1938, and of the four so elected the one receiving the highest number of votes shall hold office for a term of four years, the next highest for three years, the next highest for two years, and the next highest for one year. Thereafter, at the annual meeting of the Society in May, there shall be elected one member of the Executive Committee who shall hold office for a term of four years. In the event of the death, resignation or other inability of an elective member to serve, or in the event of the election of such member as President, President-elect, or Delegate to the American Medical Association, the vacancy on the Executive Committee thus created may be filled by election for the unexpired term at any regular or special meeting of the Society, provided due notice of such election shall have been sent to all active and life members. An elected member of the Executive Committee shall be ineligible for reëlection to this Committee for a period of two years following the completion of his or her term of office.

Section 4. After July 1, 1938, the Executive Committee shall consist of the President, President-elect, and Delegate to the American Medical Association, all *ex officio*, and four elected members whose term of office shall be four years except as provided in Section 3 above. The Secretary of the Society shall be *ex officio* secretary to the Executive Committee without vote. Four members of the Committee shall constitute a quorum for the transaction of business.

2. Renumber Sections 3, 4, 5, 6, 7 and 8 to be numbered Sections 5, 6, 7, 8, 9 and 10, respectively.

3. Amend Chapter VII, Article III, Section 1, by striking out the first two sentences and substituting therefore the following:

Section 1. The Executive Committee shall maintain the following organization: The senior elected member shall serve as chairman, his immediate junior as vice chairman, and the Secretary of the Society as Secretary without vote. It shall keep full records of its proceedings. It shall hold meetings at the discretion of its chairman or at the call of any two of its members.

4. Amend Chapter V, Article I, Section 4, by inserting after the words "Executive Committee," page 12, line 6, the words "without vote."

5. Amend Chapter V, Article I, Section 5, by adding at the end the sentence:

The Delegate to the House of Delegates of the American Medical Association shall be a member of the Executive Committee, *ex officio.*

6. Amend Chapter VI, Article VI, as follows:

Strike out the word "three" in the first line and substitute therefor the word "one."

Strike out the word "members" in the first line and substitute therefor the word "member."

Strike out the word "three" in the third line and substitute therefor the word "four."

Strike out the word "three" in the fifth line and substitute therefor the word "four."

Group Hospitalization, Inc.

Additional Representatives Elected

Lewis C. Ecker	Russel J. Jansen
Raymond T. Holden	John D. Wynkoop

TRANSACTIONS OF THE WASHINGTON SOCIETY OF PATHOLOGISTS

The meeting of the Washington Society of Pathologists was called to order at 1:30 P.M., Saturday, February 5, 1938, in the Army Medical Museum by the President, Dr. Oscar B. Hunter. There were 18 members and 1 guest present. Drs. L. L. Madsen and Arthur A. Nelson were unanimously elected to membership.

Presentation of Cases

Drs. Oscar B. Hunter and **George Tolstoi** presented 25 microscopic slides from the case of a white man, aged 17 years, who had developed mild pain and tenderness in the lower right quadrant with some vomiting and nausea, the symptoms persisting for 2 weeks before disappearing. Physical examination revealed no evidence of any abnormal condition. Several days later the patient was operated on for "an interval appendix." A tumor was found in the appendix. The appendix was 7 cm. in length and about 0.7 cm. in diameter. It was moderately firm and showed slight tortuosity of the superficial vessels. The lumen was patent for the proximal two thirds. A yellowish mass was found in the submucosa of the distal third. As the tip of the appendix was reached this mass appeared to completely occupy the lumen as well as the parietes of the organ.

Sections proximal to this mass failed to reveal any pathologic change other than those incident to chronic appendicitis. Paraffin sections revealed that proximally the neoplastic elements were confined to the submucosa. However, as the distal portion of the organ was reached the tumor invaded the mucosa and muscularis, extending to the subserous areolar tissue. The neoplasm consisted of small pockets and nests of cells, many in pseudo-acinar arrangement. The stroma was of the hyaline type and took an acid stain.

In the discussion all agreed that this was an argentaffin tumor of the appendix. Theories as to its origin were: (1) True carcinoma derived from the epithelium of the gastrointestinal mucosa; (2) one of the group of "Basalomata" analogous to the basal cell cancers of the skin; (3) a malformation belonging to the general group of tumors developing from the pancreatic rests, such as adenomyoma and accessory pancreas; and (4) a tumor derived from the chromaffin cells of the crypts of Lieberkuhn and hence of the endocrine or the paraganglionic systems. The weight of evidence is in favor of the endocrine origin in this case.

Dr. George J. Brilmyer presented microscopic slides from 2 cases. The first slides were from a colored man, aged 27 years. In May, 1937, he noticed that his ankles began to swell. His face began to swell also in the mornings, and he entered the hospital in June, 1937. After a month on a "salt-free" diet plus ammonium chloride the edema disappeared, but on July 15 it reappeared. On September 9 the edema became very marked, and he entered Gallinger Hospital. There was no history of scarlet fever, but the patient had had 5 teeth extracted in July, 3 of which had apical abscesses. The red cell count was 3,200,000; the hemoglobin was 60 per cent; the blood sugar was 91 mg; the blood urea nitrogen was 9 mg. The blood pressure was 180/120. He died on December 29, 1937. The kidneys were grossly about normal in size.

The second case was that of a colored man, aged 32 years, admitted to the hospital, March 12, 1937, with dyspnea, swollen ankles and hemoptysis. He had had a gun-shot wound of the face a year ago and a Neisserian infection at 15 years of age. The blood pressure was 198/145. The blood Kahn reaction was negative. The blood nonprotein nitrogen was 118 mg. and the blood creatinine, 10 mg. The erythrocytes numbered 1,890,000; the hemoglobin was 37 per cent; and the leukocytes numbered 12,000 with 86 per cent granulocytes. He died, March 19, 1937. The kidneys were somewhat small.

In the discussion, all agreed with the diagnosis of chronic glomerulonephritis in the first case. In the second case, the outstanding feature was the very thick Bowman's capsule and hyalinized arterioles. This too was considered chronic glomerulonephritis. The creatinine content of the blood was emphasized as being a more significant prognostic finding than the nonprotein nitrogen content, which can be greatly elevated with simple dehydration.

Dr. Arthur A. Nelson presented 25 microscopic slides from the case of a white man, 49 years old, a salesman. His trouble had begun in August, 1937, and continued for about 4 months. It started with "flu" which he had for 3 or 4 weeks. Then he developed hoarseness and progressive dysphagia. He lost 30 to 40 pounds in 2 months, and had slight dyspnea, soreness of the right chest, blood-tinged sputum (negative for tubercle bacilli) twice but no real pulmonary hemorrhage, and rather marked coughing. Laboratory findings were negative. On November 24, 1937, flat X-ray films of the chest in anteroposterior and semi-lateral views revealed an irregular contour of the mediastinal shadow on the right side which was rather significant of tumor. This mass was comparatively anterior. The heart shadow was apparently obliterated by the mass. The dome of the right diaphragm was also higher than normal. On December 1, a comparative study revealed very little X-ray evidence of change. From the left supraclavicular region part of a small mass was removed, which on microscopic study showed several fragments, presumably of lymph node, more or less necrotic, with scant reticulum. No X-ray treatment of any kind was given. The clinical diagnosis was mediastinal lymphosarcoma.

In the discussion a mixed-cell thymoma and lymphosarcoma were considered. Ewing would call it lympho-epithelioma.

Dr. J. W. Lindsay presented the case of a 53-year-old white woman, who has had painless growths on the body as far back as she can remember. These masses range in size from small papules about ¼ inch in diameter to a large pedunculated one about the size of a lima bean. The masses are most prevalent on the anterior chest wall where all the papules were found. The pedunculated large ones are found around both nipples in grapelike clusters, with 1 or 2 on the back; 1 in the lower lumbar region is of a fluctuant nature. In the left axilla there is 1, and in the left inguinal region there are 2 or 3 firm, freely movable circumscribed subcutaneous masses about the size of a pea. These nodules are all painless. The only tender mass noted is a rather soft, lima bean sized, freely movable, subcutaneous mass below and medial to the left knee. The patient believes these masses have been enlarging slowly. There is a slight pigmentation of the papules. The patient has had kyphosis and scoliosis of the spine since infancy. She had had the usual childhood diseases. The menstrual onset occurred at 18, and was fairly regular until about 7 years ago, at which time she began to bleed continuously and was given radium treatment that stopped menstruation. The patient has no cardiac, pulmonary or gastrointestinal complaints of serious or chronic nature. On January 22, 1938, left mastectomy and excision of the nipple and tumors of the right breast were performed. The following biopsies were reported:

1. Tissue from left breast—scirrhous adenocarcinoma.
2. Nipple and tumor, right breast — no malignancy.

3. Gland from left axilla — metastatic adenocarcinoma.

Laboratory studies were not remarkable. The diagnoses were von Recklinghausen's disease and scirrhous carcinoma of the breast.

Dr. Lindsay also presented lantern slides from the case of a young boy 16 or 17 years of age. He had a history of tumor of the eyebrow of long standing, soft in consistence, and macules scattered over the skin on the body. Section of one of these gave a simple picture of connective tissue type of tumor. About 6 months or a year later he came in to the hospital with some mental disturbance. A diagnosis of brain tumor was made, and the patient was operated on after considerable study. Section of bone was from the original biopsy. The boy died later on after the operation.

Captain Elbert DeCoursey presented the section of an eye in the case of a young white soldier, who had a diagnosis of glaucoma, absolute, in a totally blind left eye resulting from an old injury received in 1918. Iridectomy was performed, July 2, 1937. The pain recurred and enucleation was performed in October. Examination of the eye after fixation showed a thickened choroid in which there was an exudate resembling that of infectious granuloma. There were many collections of epithelioid cells with the formation of giant cells which notably contained pigment. The ciliary body and iris contained only a few infiltrating round cells.

In the discussion the diagnosis of sympathetic ophthalmia was agreed upon.

Dr. A. A. Nelson presented two slides of an appendix from a 20-year-old white married woman operated upon for acute appendicitis. The slides showed a decidual reaction in the serosa.

In the discussion Dr. Tomas Cajigas stated that it was a very typical decidual reaction.

Dr. Oscar B. Hunter presented one slide, a frozen section, from a white man, 72 years of age, who was supposed to have carcinoma of the larynx for which he received some treatment. His trouble apparently developed after giving a talk for the Community Chest drive when he noticed his voice getting husky and gradually becoming worse until he could not talk at all. His general health apparently improved but he still has an ulcerative area of his vocal cord. He did not have any evidence of carcinoma, and the microscopic sections show a granulomatous process which may be tuberculous.

In the discussion the diagnosis of tuberculosis was concurred in.

Lieutenant Colonel J. E. Ash read the Constitution and By-Laws of the proposed American Academy of Dermatology and Syphilology. The document was filed with the Secretary, Captain Elbert DeCoursey, for future reference.

The meeting adjourned at 3:30 P.M.

CALENDAR FOR COMING MEETINGS

Wednesday, April 6: Business Meeting of the Society. Reports of committees.

Wednesday, April 13: Program furnished by the *Obstetrical Board Studying Maternal Mortality.*

1. "Neonatal Mortality in the District of Columbia." Marian M. Crane, M.D., Specialist in Child Hygiene, Children's Bureau, United States Department of Labor. (Lantern Slides; 20 Minutes.)
2. "A Study of Still-births in Hospitals." Ethel C. Dunham, M.D., Director, Division of Research in Child Development, Children's Bureau, United States Department of Labor. (Lantern Slides; 15 Minutes.)

Discussion

(a) From the Standpoint of Public Health. George C Ruhland, M.D., Health Officer, District of Columbia.
(b) From the Standpoint of Pathology. Oscar B. Hunter, M.D.
(c) From the Standpoint of Pediatrics. Joseph S. Wall, M.D.
(d) From the Standpoint of Obstetrics. Howard F. Kane, M.D.

General Discussion.

Wednesday, April 20: Presidential Address. Buffet Supper.

Wednesday, April 27:

"An Analysis of the Value of Therapeutic Agents in the Treatment of Intestinal Obstruction." Owen H. Wangensteen, M.D., Chief, Department of Surgery, University of Minnesota.

NEWS AND PERSONALS

Medical Society of Saint Elizabeths Hospital holds its first annual dinner at the Kennedy-Warren Hotel, Thursday evening, April 14, 1938.

Dr. Charles S. White read a paper, illustrated with motion pictures, entitled "The Mortality in Empyema," at the meeting of the Tri-State Medical Association of the Carolinas and Virginia, Asheville, N. C., February 21.

Dr. James Thruston Wolfe read a paper, "Impetigo," at the recent meeting of the Tri-State Medical Association of the Carolinas and Virginia.

Dr. George J. Brilmyer read a paper, "Infections and Infestations Which the Dentist May Contract," and Dr. Joseph J. Greenlaw had as his subject, "Pediatrics: Its Relation to Dentistry," at the meeting of the District of Columbia Dental Society on February 23.

The George Washington University School of Medicine will repeat its annual popular Postgraduate Course in Ophthalmology, April 18–23, 1938, inclusive. Information concerning program and fees may be obtained by addressing Dr. William

Thornwall Davis, 927 Farragut Square, N. W. Included in the list of instructors are: Drs. G. Victor Simpson, George B. Jenkins, William Thornwall Davis.

Dr. Winfred Overholser, recently appointed Superintendent of Saint Elizabeths Hospital, delivered the Smith-Reed-Russell Lecture at the George Washington University School of Medicine on February 24. Of special interest was a luncheon in honor of Dr. Overholser, given by Dean Earl B. McKinley at the Cosmos Club following the lecture. The President of the University, Dr. Cloyd Heck Marvin, formally announced Dr. Overholser's succeeding to the Chair of Psychiatry vacated through the death of the late Dr. William Alanson White. Dr. Overholser's duties will begin September, 1938.

CAT.

Cary Travers Grayson, M.D.

(1878 - 1938)

Dr. Cary Travers Grayson, an Associate Member of the Medical Society of the District of Columbia since January 26, 1916, Rear Admiral, United States Navy, retired, National Chairman of the American Red Cross, died February 15, 1938. Dr. Grayson, a confidant and intimate friend of many statesmen, Physician to the White House during the presidencies of Theodore Roosevelt, William Howard Taft, and Woodrow Wilson, was unassuming and affable as he daily mingled with his fellow practitioners. He was born, October 11, 1878, in Culpeper County, Virginia, the son of a country doctor; was graduated in medicine from the University of the South, Sewaunee, Tennessee. Among the professional societies of which he was a member are noted: American Medical Association, American College of Surgeons, Association of Military Surgeons, Southern Medical Association. He also belonged to the Army and Navy, Metropolitan, Riding and Hunt, Alfalfa, Chevy Chase, Alibi Clubs in Washington and the Racquet Club in Philadelphia.

Dr. Grayson's funeral was held at St. John's Episcopal Church on February 17. He is survived by his widow, Mrs. Alice Gordon Grayson, and three sons, Gordon, William, and Cary, Jr.

Guy Stark Saffold, M.D.

(1880 - 1938)

Dr. Guy Stark Saffold, an Active Member of the Society since October 20, 1906, who practiced his specialty of otolaryngology in Washington after returning from attending extensive postgraduate courses in London, Berlin and Vienna, died February 27, 1938. He served throughout the World War as Captain, Medical Corps, United States Army, being attached to an evacuation hospital with the A. E. F. Dr. Saffold was born, May 5, 1880, in Frederick County, Maryland, the son of the late Dr. James Phillip Saffold and Sarah E. Linthicum Saffold. His degree in medicine was obtained at the George Washington University School of Medicine in 1905. He was a member of the Delta Tau Delta Fraternity, also the Columbia and Congressional Country Clubs. Dr. Saffold was buried in Arlington National Cemetery, following funeral services held in Fort Myer Chapel. Honorary pallbearers included Drs. A. W. Valentine, J. Russell Verbrycke, Jr., F. X. McGovern, Harry F. Anderson, J. C. Bradley, and B. L. Jarman.

Dr. Saffold is survived by his widow, Mrs. Lenore Reach Saffold; three children, Guy Stark, Jr., Rosemary, and Virginia; a brother, Ray Phillips Saffold of El Paso, Texas; and a sister, Mrs. H. F. Sommers of Hong Kong, China.

REPRINTS RECEIVED

The following reprints have recently been received for which due acknowledgment is made:

"The Roentgen Diagnosis of Pathological Processes of the Small Bowel." Joseph F. Elward, M.D., American Journal of Roentgenology and Radium Therapy, August, 1937.

"Roentgen Aspects of Congenital Aplasia of Lung." Joseph F. Elward, M.D., Radiology, December, 1936.

"A Study of the Mortality Rate and Complications Following Therapeutic Malaria." Theodore C. C. Fong, M.D., Southern Medical Journal, November, 1937.

"Psychoanalysis in Psychoneurosis." Ray F. Guynn, M.D., Medical Record, February 2, 1938.

"Acute Puerperal Inversion." J. Bay Jacobs, M.D., F.A.C.S., American Journal of Surgery, April, 1936.

"Further Improvement in Pelvimetric Roentgenography." J. Bay Jacobs, M.D., F.A.C.S., American Journal of Obstetrics and Gynecology, July, 1936.

MEDICAL ANNALS

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SOME ERRONEOUS CONCEPTS ENCOUNTERED IN THE PRACTICE OF GASTROENTEROLOGY*

JOHN L. KANTOR, M.D.

New York City.

My purpose this evening is to discuss, very informally, a subject that in one form or another has interested every physician, namely, the recognition and avoidance of mistakes in practice. The discussion will perforce be confined to the field of gastroenterology, since this is the branch to which I have contributed my own quota of errors and in which I have learned my own hard lessons. Instead of picking out single instances of failure in diagnosis, which may be the result of individual carelessness or negligence, it may be more profitable to point out those lapses caused by erroneous thinking, because these are more likely to be widespread in their incidence and more dangerous in their effects.

If one takes the trouble to trace the origin and development of the medical views and opinions held by himself at any given moment, he will see how really long and difficult is the process of self-education. For does not each medical student start out with the firm conviction that his college is the best and his teachers the wisest? It is only later that he begins to see that the most one can ask of a medical school is that it accurately reflect the best teaching of the day, and later still it may dawn on him that some of this teaching might have been wrong or inadequate. Next, he becomes conscious of the fact that medicine has continued to advance since his graduation and that the time has suddenly arrived for him to decide whether he will be satisfied to keep falling behind, or whether he will make the necessary efforts and sacrifices to stay abreast of the discoveries in his profession. If to this rough sketch of the medical pilgrim's progress we add all the other factors that may influence our training, such as opportunities or lack of opportunities for hospital work, for research, for reading, for attending scientific meetings and exhibitions, we must realize how defective and fortuitous may be the foundation on which each one of us must carry on his practice and how essential it is to continue to question, review, appraise, and study, if we hope to minimize the inevitable incidence of error.

In this connection it should hardly be necessary to point out that the very human desire for new things has its elements of danger. Change can be for the worse as well as for the better. That every new thing is good is no more true than that every old thing is worthless. The insistence on, and the rediscovery of, old truths seems to be a very real element in the education of every thinking physician.

In the selection of topics for illustrating errors in gastroenterology, no very profound plan is followed. In a general way the theme progresses from the general to the particular. Otherwise the topics are selected at random from the writer's actual experience in practice.

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* Read at the joint meeting of the Section on Gastroenterology and the Society, January 12, 1938.

The History

Perhaps the easiest mistake one can make in gastrointestinal practice is to fail to take an adequate history. This is because digestive complaints often date back to childhood, and a digestive history is therefore likely to be a long history, taking not less than one-half hour, and often a full hour or more, of strenuous cross-examination. To try to crowd the whole story into a limited period of perhaps 5 or 10 minutes is to invite error in many cases.

The reasons for such a hurried procedure may of course be sheer carelessness or failure of judgment, but more often perhaps the fault seems to lie in the organization of medical practice, and this, in my opinion, is remediable. Thus, in the public medical services, enough time should be made available by administrative authority and planning, whereas in private practice the same result may be secured by so completely convincing the patient of the importance of a properly taken history that he is willing to pay adequately for the service. This is not so difficult as might appear and, in my experience, is particularly essential for success with all sensitive and neurotic patients who will be found especially responsive to every evidence of patience and consideration. Since these individuals constitute the bulk of every type of practice, both public as well as private, the matter is really one of practical importance.

Another common fault in history-taking in gastrointestinal cases is failure to inquire into the patient's eating habits and procedure. As a matter of fact, our prescription of diets is still largely a matter of trial and error. Hence, ignorance on the part of the physician of a patient's past dietary experience may prove a costly and embarrassing handicap.

Habitus

A great deal has been written about the rôle of body structure in disease, and particularly about the recognition, significance, and management of the asthenic habitus, the anatomical basis for the congenital visceroptotic invalid. This condition is undoubtedly much better understood now than it was before the pioneer work of Glenard, Stiller, Bauer, and Bryant. Yet, some among us still fail to appreciate the basic fact that the symptoms in these patients are due to asthenia, fatigue, atony, malnutrition and the associated autonomic instability, and not to organic disease. Occasionally, though less often than formerly, one still encounters asthenic patients who have been subjected to inadvisable operations, such as gastroenterostomies in the absence of obstruction, appendectomies and cholecystectomies in the absence of inflammation or calculus formation, various plications and fixations, and most inexcusable of all, multilating resections of the female genitalia.

On the other hand, it is generally assumed that the possession of a stocky or sthenic habitus is equivalent to a guarantee of good digestive health. That this is not necessarily so may be illustrated by the observation first made by the late John Bryant, that the syndrome of appendicitis often runs a much more severe course in sthenic than in asthenic persons. It was his teaching that in case of doubt it was safe to delay operation in those of slim body structure, but it might be fatal to wait in patients of stocky habit. This fact has been repeatedly confirmed in my experience.

Another respect in which sthenic patients seem to come off second best is in the matter of digestive tract carcinoma. This is strongly suggested by the observations listed in Table 1.

TABLE 1

Relation of Habitus to Cancer

	CASES		RATIO	
	Sthenics	Asthenics	Sthenics	Asthenics
Cancer of stomach (99 cases)	51	5	10.4	1.0
Cancer of colon (45 cases)	17	5	3.4	1.0
Cancer of rectum (20 cases)	6	2	3.0	1.0
Cancer of esophagus (18 cases)	6	1	6.1	1.0
Average of all cancers (178 cases)	79	13	6.7	1.0
General incidence (4,700 cases)	1,251	939	1.3	1.0

Although the full significance of these observations is not yet apparent, we should lose no time in utilizing this information clinically. We have already learned the lesson of taking seriously all digestive symptoms in patients of cancer age. From now on we must remember to pay special attention to those of sthenic habitus, not resting until digestive tract malignancy is either definitely found or excluded.

ANOMALIES

The rôle of anomalies seems to be a perpetual stumbling block to many of our colleagues. They find it hard to understand how an anatomical condition present since birth can be responsible for symptoms first appearing much later in the life of the individual, and then behaving in an unpredictable manner as regards their recurrence. The explanation of this paradoxical situation has been attempted elsewhere by the author, hence will be omitted here. Suffice it to make the paraphrase of Lincoln's epigram, namely, that anomalies seem to cause symptoms in some of their owners all of the time, and in all of their owners some of the time, but are under no obligation to cause symptoms in all of their owners all of the time. This variability results from alterations in the special compensatory mechanism which the body seems to provide in the presence of all kinds of congenital malformation.

Perhaps the best studied digestive tract anomaly that is compatible with long life is the redundant colon. Unless its existence is thought of, and unless attempts are made to demonstrate its presence by appropriate studies, it may be entirely overlooked and the symptoms caused may be gravely misinterpreted. The abdominal pains resulting from the associated colonic malfunction have been erroneously ascribed to organic disease of every adjacent part or neighboring organ. Thus, pain in the left lower quadrant has been attributed to disease of the pelvic adnexa, stone in the ureter, carcinoma or diverticulitis of the sigmoid colon; if in the left upper quadrant, it has been ascribed to heart disease; if in the epigastrium, to ulcer; if in the right upper quadrant, to gallbladder disease; and if in the right lower quadrant, very commonly indeed, to chronic appendicitis. Not only have these conditions been diagnosed, but patients have actually been operated on because of such false deductions. I have even seen a case in which a colostomy was performed for an impaction in a redundant colon, the operator thinking he was dealing with a carcinoma.

CONSTIPATION

The public suffers widely not only from constipation but from several widespread errors in regard to the nature of bowel function and bowel evacuation. For example, it is commonly believed:

1. That the retention of waste matter in the body beyond one day is detrimental to health.
2. That if the bowels fail to move one day something must be done about it.
3. That a large mushy stool, or series of stools, is normal, even beneficial.
4. That the colon is a sewer to be emptied as often and as thoroughly as possible.
5. That the resting period of the bowel which follows a thorough purging is a sign of constipation which can only be cured by more purging.
6. That many common symptoms such as bad breath, pimples, headache, fatigability, and vertigo are best treated by cathartics or enemas.

Besides, it is so easy to reach for a pill, and so difficult to consult a physician, and having consulted one, to follow his suggestions.

On the other hand, not all physicians are particularly interested or adept in the radical cure of constipation. To begin with, it would appear that something more can be done in the prophylaxis of those cases which follow childbirth and surgical operations. Yet, how many surgeons take the pains to inform their patients that the enemas, cathartics, or suppositories which are administered during the period of post partum or postoperative convalescence in bed are but temporary measures? They should never be allowed to persist as vicious habits once the patient resumes full bodily activity.

In undertaking the radical cure of constipation due to vicious habit formation, experience shows that many doctors fail to grasp the fact that the withdrawal of the irritating cathartics, enemas, or irrigations presents the same psychic problems and hazards as does the more heroic program in the case of drugs of the narcotic order. Courage, patience, strength, and perseverance are required of the physician in both cases. To strengthen the patient's morale and enlist his intelligent coöperation, an explanation of elementary colonic physiology and hygiene is invaluable. This task is greatly simplified if it can be undertaken with the aid of a roentgen study supplying daily observations of a standard progress meal. There is no sounder psychotherapy for an apprehensive patient than the reassurance given by a series of films which show that the colon still propels its contents even if no stool is produced during the waiting period.

It is during this waiting period, that is, before spontaneous bowel function is restored to the decompensated colon, that many attempts at treatment break down completely. On the one hand, the physician must be prepared to wait patiently, and usually much longer than the patient ever dreamed was safely possible, for the appearance of the first spontaneous bowel movement. On the other hand, the doctor must remember the fact that in some 18 per cent of people the stool will pack in the rectum. This tendency can be recognized in its earliest stages by frequent rectal examinations. If packing does occur, no further time should be spent in watchful waiting, but the rectum should be evacuated by gentle measures and the proper treatment instituted for the rectal type of constipation. If, however, a spontaneous stool is followed next day or the day after by another, the stage is set for the complete restoration of normal colonic function. The details of this procedure hardly belong to the scope of this paper.

RIGHT LOWER QUADRANT PAIN

Pain in the right lower quadrant is a most prolific cause of diagnostic error and uncertainty. It seems that so many of us keep forgetting that the two most common abdominal conditions, namely, constipation and colonic instability (so-called simple colitis), are very commonly associated with both right lower quadrant pain and right lower quadrant tenderness. One or both of these findings may also occur in congenital low cecum or right coloptosis without organic disease; cancer or other organic diseases of the cecocolon; terminal ileitis; right nephrolithiasis; chronic gallbladder disease (rarely); pelvic disease in women; and inguinal hernia. Therefore, to diagnose chronic appendicitis and to operate for this condition without careful consideration of the other possibilities is a very irrational procedure. In every chronic case it is always wise to investigate the colonic function, and if this is impaired in any way, to seek to restore it to normal before performing a needless appendectomy.

Another fallacy in connection with chronic appendicitis is that the roentgen ray examination can be relied on to make the diagnosis. I do not believe this to be so. The most the roentgen study can do is to prove that the local symptoms are probably due to some other cause than inflammation of the appendix.

Indeed, in my opinion, the diagnosis of chronic appendicitis is no easy matter, offering a sharp contrast to the acute disease which can be rather readily detected at the bedside. For the diagnosis of the chronic cases I know of only one sure method, and that is the therapeutic test, or in other words, the result of removal. Even the pathologist, to say nothing of the surgeon, is often at a loss to distinguish between that kind of a "chronic appendix," the removal of which relieves the patient of his symptoms, and the kind whose removal leaves the patient with a scar and a distrust of surgical judgment.

In all doubtful cases it is suggested that some procedure such as the following be practiced: (1) Secure an accurate history of the acute attack, or better still, see the patient in one if possible. (2) Study the entire digestive tract, the genitourinary system, and the pelvis in women. (3) Restore the colonic function to normal in all disturbed cases. (4) Note whether the patient is sthenic or asthenic. (5) If symptoms persist or recur despite careful medical management, and especially if the patient is sthenic in stature, recommend an exploratory operation with therapeutic test removal of appendix, but do not promise a cure.

PEPTIC ULCER

The therapy of peptic ulcer seems to be a great stumbling block to those who fail to realize that the etiology is still unknown and that the clinical course in any given case is uncertain. The symptoms respond to such a variety of factors that one must be on his guard against assuming that any particular mode of treatment is responsible for a cure. Moreover, uncritical enthusiasm in the use of drugs, no matter how honestly inspired, may prove dangerous. This is well illustrated in the case of a popular form of treatment which, in addition to the wise prescription of frequent small feedings, unhappily recommended the use of truly enormous doses of alkaline antacids. This particular medication was based on the theory that in order to cure an ulcer, a completely and continuously alkaline gastric reaction was desirable. What happened as a result? Reports began to appear in the literature describing gastric tetany due to the alkalosis resulting from systemic over-alkalization. Tetany cases had practically disappeared from medical practice following the increased use of the stomach tube for the palliative relief of advanced pyloric obstruction, and of gastroenterostomy for the radical cure of this condition. Yet the course of medical progress was actually set back due to the popularization of an erroneous procedure based on an unproven assumption.

Owing to two peculiarities in the natural history of ulcer disease, namely, that most ulcers ultimately heal, and that the course and duration of each attack is uncertain, there is much difficulty in appraising the value of any therapeutic measure. This leaves the field wide open for the introduction of all sorts of therapeutic procedures. If one reviews the methods popular in our own generation, he will recall such drugs as silver nitrate, foreign proteins, mucin, and histidine, all enthusiastically heralded as curative, but all rapidly eclipsed by the next innovation. This sort of experience teaches us the value of Lichtwitz's dictum, "The problem of medical practice consists in reconciling the skepticism of the scientist with the optimism of the practitioner."

FOODS

Of the many fallacies connected with the subject of foods there are two which I believe are of special interest to the gastroenterologist. These have to do with milk and meat. At the present moment the prejudice seems to be in favor of milk and against meat.

First, as to milk. Milk is an important foodstuff, cheap, wholesome, universally available, and acceptable to most people. It is especially wellborne by infants, but, as every pediatrist knows, not by all infants. Also, when people grow older, their tolerance to milk seems to diminish. In patients afflicted with most forms of colitis and certain disorders of assimilation, milk is positively harmful.

Owing to its availability, milk has been used as a basis for the dietetic management of peptic ulcer. Here again it is well tolerated in most cases. However, there are quite a few individuals who have both ulcer and colitis, and in these, symptoms may be aggravated instead of relieved, or new symptoms may be added. As has been stated elsewhere, "In the presence of such a combination, milk disagrees either at once or after an interval, when the margin of tolerance has been exhausted. In the latter instance particularly, the sequence of events may be misunderstood, and milk is continued in an effort to relieve the very symptoms it causes. The writer has seen many ulcer patients, including a fair number of physicians, who have suffered unknowingly from milk intolerance for months and years. The more pain they had, the more milk they drank, so that they had become, as a rule, fat, pasty-looking, very gassy, and wholly miserable. Their relief was equalled only by their surprise when they were abruptly weaned and allowed to partake of steaks, chops, seafood, and an occasional glass of beer as a final gesture of emancipation."

Before leaving the subject of ulcer, may I pay my tribute to the contribution of Dr. Seale Harris, with whom many of you are familiar. He was one of the first, if not the first, to protest against the inadequate feeding of ulcer patients. His influence helped greatly to expand and balance the ulcer diet.

Next, as to meat. Meat has long been in disrepute, not only with vegetarians, but with many others. When I commenced my medical studies, the profession was much impressed by the physiological experiments of Chittenden which showed on how little protein man could exist and which were quickly interpreted to mean that the less meat people ate, the better for them. The protest of Meltzer that there was a significant difference between the minimum protein requirement and the optimum protein requirement did not seem to make much impression. Meat was "bad" for kidneys, "blood pressure," constipation, "autointoxication," arthritis, and that was that.

To be sure, those of us who had read Dana's "Two Years Before the Mast" and Parkman's "The Oregon Trail" might have gathered that sailors and hunters of the pioneer days seemed to thrive on an exclusive meat diet. More recently the explorer Stefansson showed how life can be sustained indefinitely in the arctic by the consumption of meat or fish alone.

Perhaps a few brief quotations from these authors may be of interest. Dana describes the life of sailors on the coast of California in 1840: "During all this time we lived upon almost nothing but fresh beef; fried beefsteaks, three times a day—morning, noon, and night. . . . How many pounds each man ate in a day, I will not attempt to compute. A whole bullock—we ate liver and all—lasted (6 of us) but 4 days. . . . Indeed, during all the time we were upon the coast, our principal food was fresh beef, and every man had perfect health. . . . Whatever theories may be started by sedentary men, certainly no men could have gone through more hard work and exposure for 16 months in perfect health, and without ailings and failings, than our ship's crew."

Parkman describes how he and his white companions treated a starved wayfarer whom the Indians had picked up in a state of exhaustion and who "eagerly demanded meat. This we refused, telling him to wait until morning; but he begged so eagerly that we gave him a small piece, which he devoured, tearing it like a dog. He said he must have more. We told him that his life was in danger if he ate so immoderately at first. He assented, and said he knew he was a fool to do so, but he must have meat. This we absolutely refused, to the great indignation of the senseless squaws." Fortunately, the senseless squaws had not been educated in the wisdom of the whites and they surreptitiously fed the man meat, and he promptly got well.

Parkman, himself suffered horribly from dysentery. He began to improve immediately after a buffalo hunt when large supplies of fresh meat were available. Note his naïve account: "The breakfast was a substantial one. It consisted of the rich, juicy hump-ribs of a fat (buffalo) cow; a repast absolutely unrivaled. It was roasting before the fire. Taking our seats around it (we) unsheathed our knives and assailed it with good will. In spite of all medical experience, this solid fare, without bread or salt, seemed to agree with me admirably."

Stefansson's experience is not only closer to our time but is better controlled scientifically. He writes: "More than 25 years have passed since the completion of my first 12 months on meat and more than 6 years since the completion in New York of my sixth full meat year. All the rest of my life I have been a heavy meat eater, and I am now 56. That should be long enough to bring out the effects. Dr. Clarence W. Lieb has reported in the American Journal of Digestive Diseases and Nutrition that I still run well above my age on those points where meat has been supposed to cause deterioration. The same is the verdict of my own feelings. Rheumatism, for instance, has yet to give me its first twinge." It should be added, for the sake of completeness, that Stefansson found that Eskimos who live on an exclusive meat and fish diet maintain an excellent state of health and that, interestingly enough, as long as they continue this diet, they never seem to suffer from dental caries.

These considerations bring us back to the actual application of this knowledge to the practice of gastroenterology. May I do this by presenting briefly and categorically the following considerations:

On the part of the laity, there is still considerable fear concerning the use of meat. The old classification of red and white meat persists in beclouding straight thinking. Patients are likely to omit meat, not only from conscientious motives involving the slaughter of animals, but because of groundless fears of producing or aggravating the diseases already mentioned.

On the part of the profession, one gathers the impression that the value of increased or exclusive meat diet is not sufficiently appreciated in such conditions as fermentative diarrhea, idiopathic grave colitis of the "purulent" variety, sprue, and all forms of steatorrhea. Meat is probably fed too late or withheld too long in the management of peptic ulcer. Meat should also be fed, and salt omitted, in all cases of low blood protein where tissue edema is present. Such swellings may occur anywhere but are particularly dangerous, as pointed out by Ravdin, when they take place in the neighborhood of lesions such as ulcers or recent resections where they may cause obstruction of the pylorus or of a gastroenterostomy stoma.

ERRORS INHERENT IN PROGRESS

Before ending this discussion I should like to return to a general source of error which has already been mentioned in passing. This, strange to say, seems to be inherent in scientific progress. It seems that each new advance in technic must, in addition to its obvious advantages, inevitably carry with it potential sources of error. For example, when the roentgen method of mucosal visualization was first introduced, I found several cases which I believed were very early carcinomas of the stomach. Yet operation showed that they were only instances of giant rugae which were revealed with unexpected clarity by this novel method. This experience was published in the American Journal of Roentgenology and Radium Therapy in 1936 as an example of error in diagnosis resulting from a new procedure. I am sure that many in this audience can recall any number of instances in which other new laboratory tests, instead of helping, actually hindered for a time the process of diagnosis.

It may not be necessary to add in passing that some diagnostic procedures in their original form were actually dangerous to the patient, or, as in the case of the X-rays, to the operator as well, but it does seem worth while to repeat that therapeutic innovations always carry a potential threat to the sick man, as already illustrated in the case of over-alkalization.

To return to new diagnostic procedures, it seems to me that errors can be minimized, though I doubt whether they can ever be entirely avoided, by greater emphasis on the patient. The patient must never be sacrificed to the laboratory but must ever remain the center of attention. Each disintegration of the diagnostic process through the increasing gamut of laboratory manipulations must be met by a corresponding reintegration of data and a revaluation of evidence in terms of the patient's original diagnostic problem. In other words, the physician and not the laboratory must make the final diagnosis.

SUMMARY

1. In this discussion of the causes of errors encountered in the practice of gastroenterology, emphasis is laid on erroneous thinking, with its far-reaching consequences, rather than on individual mistakes in diagnosis.

2. Errors are discussed under the special topics of history-taking, habitus, anomalies, constipation, right lower quadrant pain, peptic ulcer, and foods, particularly milk and meat.

3. Every diagnostic innovation seems to carry inherent and unknown possibilities of error. In addition, the constant growth of laboratory procedures involves an increasing dispersal of attention. These dangers may be minimized, although unfortunately not entirely avoided, by a corresponding effort on the part of the physician toward reintegration of all clinical and laboratory data. The patient remains the constant center of attention.

THE SURGICAL TREATMENT OF PEPTIC ULCER*

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The inclusive term, "peptic ulcer," grouping as it does both duodenal and gastric ulcer, is misleading, and there is little justification for its general use. While these two types of ulcers may have much in common etiologically, the similarity ends when the ulcer is fully established. The differentiation is apparent in their morbid anatomy, prognosis, surgical treatment and often in their complications. I prefer, therefore, to deal with duodenal and gastric ulcers as distinct entities.

When a patient submits to surgery, he has a right to expect recovery from the operation and complete or partial relief from the disease. He may, also, expect to evade complications and avoid recurrence of the disease from which he has suffered. Unless, as surgeons, we can subscribe to and carry out such an implied contract, with reasonable hope of its fulfillment, we should not participate in the enterprise, otherwise known as the operation.

By a better understanding of the entire picture of ulcer in the past two decades, the internist has made a logical approach to the problem, and a large percentage of the patients have been cured or greatly relieved. There has been a trend toward medical treatment, directly traceable to the excellent results that have followed intelligent management.

Indications for Surgical Treatment

However, there are developments during the course of some ulcers that make surgical intervention the only means of relief; while in others, it offers the safest method of treatment. The conditions in cases both of duodenal and gastric ulcer in which surgery is indicated are, in the order of importance, acute perforation, persistent pyloric obstruction, chronic perforation, intractability or chronicity, and recurrent massive hemorrhage.

No one will deny that a perforating ulcer will occasionally be sealed by a bit of omentum or the liver, and the life of the individual prolonged or saved by the fortunate juxtaposition of the structures involved. However, the mortality in the unoperated perforated ulcer is well over 90 per cent. It is estimated that the mortality increases 4 per cent hourly from the time of perforation; hence the importance of prompt diagnosis and exploration. It should be borne in mind that the ulcer which perforates is not necessarily preceded by a long story of dyspepsia, and for that matter, there may be no history of ulcer at any time. The entire pathology, from the inception of the ulcer to its perforation, may consume but a few days. Perforation demands prompt surgery.

I have noted persistent pyloric stenosis as an indication for surgery, and emphasize "persistent." Stenosis with a high degree of retention, under rest and appropriate treatment, often resolves itself into a partial stenosis with small residue. Unless pressed by a low state of nutrition or impending alkalosis, surgery should not be undertaken without a period of careful observation, the administration of intravenous solutions of salt and glucose, possibly blood transfusions, and an X-ray check up. Without material and lasting response to such treatment, surgery is clearly in order.

The chronic perforating type of ulcer is distinguished by its radiologic silhouettes and the ever-present discomfort experienced by the patient. Failure to show a lessened diameter, or a shallower crater, after medical care, are ominous signs and should not go unheeded. All perforating ulcers do not perforate, but, unfortunately, a fair number continue their destructive process and terminate in an abdominal tragedy. There are no reliable premonitory signs. The roentgenologist cannot estimate the thickness of the floor of the ulcer. The patient who continues his daily routine with a deep, chronic perforating ulcer that has not shown symptomatically or radiologically positive improvement, runs less risk with a surgical operation than with a continuation of medical treatment.

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* Read at the joint meeting of the Section on Gastroenterology and the Society, January 12, 1938.

The intractable ulcer may be defined as one which resists all forms of what constitutes approved methods of treatment. These probably are a large part of the 15 per cent of ulcers that medical measures fail to cure. These ulcers are the forerunners of stenosis in the duodenal ulcers, and carcinoma in the gastric ulcers. Surgery undertaken before the late stages finds the patient a much better operative risk and rescues some from carcinomatous invasion.

The statement has been made and repeated time and again that a patient rarely dies as a result of his first massive hemorrhage from ulcer. This cannot be denied. However, this statement does not imply that we should look upon a profound hemorrhage with equanimity. The subject has provoked much discussion. Operation during severe hemorrhage with the object of controlling it has been warmly advocated by those who have been successful in such an undertaking. The operation is hazardous, if nothing else. Bolstered by continuous or very large blood transfusions, those who have undertaken this operation claim that the end justifies the means. Balfour disposes of the subject in this way: "The present status of the management of acute hemorrhage from the stomach or duodenum, therefore, may be summarized by saying that until there is some more definite means than are available now of recognizing the small percentage of patients who will succumb to the hemorrhage, any attempt to employ surgical measures in other than those cases in which an obviously severe recurrence of bleeding takes place while the patient is under treatment for hemorrhage, will result in unnecessary deaths, and in sufficient number that the mortality in hemorrhagic ulcer will be higher under surgical treatment than it will be under medical management."

If a patient survives one or two massive hemorrhages, particularly while under treatment, surgery for the cure of ulcer should be undertaken when the convalescence is at its peak. Irrespective of the type of ulcer, I believe this is a sound principle. It is well to remember that the radiologic study of the ulcer gives no clue to the tendency to bleed. The excavating ulcer is less likely to be the source of the hemorrhage than the large diffuse type. One important observation by Hesser is entitled to consideration; in 195 patients under 55 years of age with hemorrhage there was no mortality, while in 109 patients over 55 years of age there were 9 deaths.

What has been stated applies equally to duodenal and gastric ulcers, but in the consideration of ulcers of the stomach there are injected into the picture two factors which deserve special consideration: first, the tendency of gastric ulcer to become malignant; and second, the location of the ulcer in some cases presenting a very difficult problem, medical or surgical.

The possibility of a gastric ulcer becoming malignant has been variously estimated, and somewhat actively debated, without a final compromise. The statement came from one of the larger clinics in this country that in carcinoma of the stomach at least 45 per cent of cases are preceded by ulcer. From England and the Continent an incidence as low as 5 per cent was the estimate. This wide variation has no tangible explanation, but the fact remains that a chronic gastric ulcer has a fair chance of becoming malignant. This fact places the gastric ulcer in a category not occupied by the duodenal ulcer, and, in view of this malignant tendency of the gastric ulcer, surgery has been accepted by the patient without reluctance. Consequently, this danger, which cannot be predicted in any specific case, has been the agent which transfers the medical case to surgical care with less delay than is tolerated in duodenal ulcer.

The inaccessibility, from a surgical viewpoint, in many ulcers of the stomach does not give the excellent results obtained in duodenal ulcer, even with a more formidable operation. Ulcers near the cardia and on the posterior wall of the stomach present a problem to tax the skill and ingenuity of even masters in gastrointestinal work. The surgeon is beset with a complex problem; the ulcer, if uncured, may become malignant; if operated upon, an operation little short of a gastrectomy becomes necessary.

Operative Procedures for Duodenal Ulcer

No operation of any kind is indicated unless an ulcer can be demonstrated when the abdomen is open. This statement admits of no exception.

Excision. Excision alone of the ulcer has a very limited field, since there are few ulcers uncured medically that lend themselves to excision without narrowing or deforming the pylorus or duodenum to such an extent that normal peristalsis is seriously delayed or altered. Resection of the ulcer, combined with some form of pyloroplasty, is gaining much favor, in that it accomplishes two very desirable ends: (1) removal of the pathology and (2) favorable alteration of the gastric physiology. It is generally granted that lowering of gastric acidity by any means reduces the incidence of ulcer. A pyloroplasty of generous proportions will do just that. The Finney, Horsely, Mayo, or Judd pyloroplasty with excision has become much more popular in recent years than some of the older methods of treating ulcer. Excision should always be practiced if one is dealing with a bleeding ulcer.

Excision and Gastroenterostomy. The frequency of gastrojejunal ulcer following posterior gastroenterostomy has been the basis for condemnation of this operation for ulcer, many surgeons veering to the radical partial gastric resection. Gastrojejunal ulcer has been estimated to follow gastroenterostomy in 3 per cent of the cases in one large clinic, to several times 3 per cent in other reported series, but it is only fair to state that marginal or gastrojejunal ulcer can follow any form of anastomosis between the stomach and the jejunum and is not confined by any means to posterior gastroenterostomy. The operative treatment of marginal ulcer after gastroenterostomy is much less complicated than for the same lesion after partial resection of the stomach and gastroenterostomy.

There has been a disposition to reject gastroenterostomy on these grounds alone, but, I believe, without due consideration of several important factors. We are all cognizant of the fact that the operation has been needlessly and poorly done in many instances. Martin Fisher says that "gastroenterostomy is the indoor sport of surgeons." The operation gives a high percentage of cures and has the lowest mortality of all operations for the cure of duodenal ulcer, being about one fourth that of gastric resection. In properly selected cases the operation is attended with about 80 to 85 per cent of cures, and a mortality of less than 2 per cent. It is particularly indicated in women, since gastrojejunal ulcers are rarely noted in the female. The operation should be avoided in the young, the high small stomach, a small lesion, and very high acidity.

Gastric Resection. Gastric resection is said to give a larger percentage of cures than any other operation for duodenal ulcer. It also has the highest mortality. Of those patients who fail to get relief, most suffer from chronic gastritis, and as many have marginal ulcers as in other types of gastric surgery, according to Berg. The chief indications for gastric resection are large, repeatedly bleeding ulcers and ulcers of cases in which there has been a conservative operation without relief. The type of gastric resection best adapted to the case must be determined at operation and will not be discussed in this paper.

Antral Exclusion. As suggested by Divine, antral exclusion consists in dividing the stomach near the pylorus, closing the distal segment and anastomosing the proximal opening to the jejunum. It has given excellent results in cases of the large indurated and bleeding duodenal ulcer, with a very low mortality. The operation is deserving of a much wider application than it now enjoys.

Several other operations should be mentioned in passing. Denervation of the suprarenal glands, as practiced enthusiastically by Crile, requires a longer period of probation before it can be endorsed. Various methods of operation have been devised and applied, with the chief objective to diminish the acidity of the gastric contents. Among these may be mentioned fundusectomy, resection of the branches of the vagus nerve, and cholecystogastrostomy. All of them have failed to meet the requirements of an operation designed to give permanent relief.

Operations for Gastric Ulcer

The surgery of gastric ulcer demands superlative judgment. The ulcer in the stomach has so many manifestations and possibilities that it is not a case of merely selecting a patient for operation but selecting an operation for an ulcer. This is highly specialized gastrointestinal surgery and runs the gamut from attacking the ulcer by complete gastrectomy to a flank attack by jejunostomy.

Excision. Excision alone is applicable only to those types of ulcers which are considered "free," that is, not fixed by adhesions and not involving the lesser curvature. If an ulcer can be completely excised without disturbing the drainage or motility of the stomach, a satisfactory result can be safely predicted. But if the emptying or motility of the stomach is diminished or greatly altered by such an excision, the operation will be a distinct disappointment. Excision alone has been an abused operation, and the cures without recurrence have been about 50 per cent, much lower than in other gastric operations. Gastroenterostomy alone or combined with excision depends upon its drainage and altered acidity to accomplish a cure. This fails often to meet the indication, because the ulcer which remains undisturbed carries with it the possibility of malignant degeneration or of allowing a malignant lesion to continue its course undisturbed. One indication clearly looms up—the large perforating, highly inflammatory type of ulcer, and in this instance gastroenterostomy is more or less a palliative measure. It is attended with a very low mortality and offers a very safe procedure for a very serious situation. It is employed rarely and when used is frequently followed by more radical surgery. It is safe to state that the lowest mortality and the highest percentage of cures are obtained by a combination of excision and gastroenterostomy. This is contrary to the practice in Europe, where gastric resection is the operation of choice. Many American surgeons have adopted this view, both in theory and practice, but no adequate statistics are available for an unbiased deduction.

Generally speaking, the further the lesion from the pylorus, the more likely excision and gastroenterostomy is to be the operation of choice, particularly if the ulcer is a small one. Lesions near the antrum, treated by excision, are likely to be followed by narrowing of the pylorus and retention, unless combined with a gastroenterostomy. It is better surgery to resect the stomach for lesions near the pylorus than to combine excision and gastroenterostomy.

Resection. Resection of the stomach is clearly indicated in large ulcers which are not perforating or inflamed and permit resection without undue risk, no matter what area of the stomach is involved, but particularly as they approach the pylorus. The argument for resection is based largely on the point that it removes the ulcer-bearing area; hence, recurrence is rare. Unfortunately, this is not altogether true. If we could be assured that recurrence is rare after resection, we would be justified in doing resection routinely, notwithstanding the high mortality that follows it. It cannot be denied that the mortality is about four times that of excision and gastroenterostomy. The situation may be disposed of in this way: If the lesion is near the pylorus or is large and free, resection is the operation to be preferred.

Partial gastric exclusion, with some type of gastroenterostomy, such as a Polya or Bellroth II, deserves more consideration than it enjoys at present. Without doubt, this affords the most complete pyloric rest, and the operation is one of the most effective indirect approaches to the surgical treatment of gastric ulcer.

Segmental resection or sleeve resection is occasionally indicated when other methods cannot be safely carried out.

Jejunostomy alone, as a means of affording rest to the pathologic area and allowing adequate alimentation, has been highly extolled by several outstanding writers, but it has not replaced direct attack on the ulcer. Its place seems confined to those cases in which feeding is difficult or impossible, and a hazardous operation is contraindicated by the impaired vitality of the patient. While some cures have followed jejunostomy alone, it is not warranted in the large majority of ulcers, and its constant application will be quite disappointing.

Total gastric resection for gastric ulcer has such a narrow field of usefulness that discussion of it is an obvious verbosity.

Regardless of the type of surgery, it is my firm conviction that the patient has a better convalescence, the cures are more frequent and relief is more lasting, if the patient is kept under observation by a competent internist for several months following the operation.

CLINICAL OBSERVATIONS ON RECTAL DIGITALIS THERAPY IN CONGESTIVE HEART FAILURE

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Occasionally, but often enough, one encounters, both in private and hospital practice, patients in advanced stages of congestive heart failure who are unable to take digitalis by mouth because of congestive nausea and vomiting—not to be confused with the same symptoms caused by digitalis intoxication. It is in such instances that other avenues of administration are to be considered. The intravenous administration is fraught with danger, because the margin of safety between the therapeutic and toxic dose is very small. Furthermore, even when well tolerated, it may injure the veins. It is also objectionable since it requires the presence of the physician. Regarding the subcutaneous or intramuscular method of administering digitalis, the rate of absorption is variable. The injection is ineffective, especially in the presence of circulatory stasis and edema. It may be that since these substances are irritants they cause pain when injected into the tissues. Lastly, the only other way of introducing digitalis into the body is by the rectal route.

The rectal administration of digitalis has long been recognized as a satisfactory way of giving the drug. This mode of administration, however, has been but little employed in the United States as evidenced by the infrequent clinical reports or textbook references, viz., Levy,[1] Beckman,[2] White,[3] Luten,[4] Smithline,[5] Levine,[6] Fishberg,[7] etc. In Europe, on the other hand, rectal digitalis therapy is frequently used as testified to by the clinical observations of Wenckebach,[8] Eichhorst,[9] Morin,[10] Cloetta,[11] Meyer,[12] Zondek,[13] Groedel,[14] Lewis,[15] et al. The rectal method of administering digitalis in this country consists, for the most part, of either the diluted tincture of digitalis or aqueous preparations. This method has not met with universal approval because of its cumbersome technic and discomfort to the patient, not to mention the necessity at times of administering bulky dilutions of the digitalis tincture to obviate irritation of the rectal mucosa. On the continent, digitalis in suppository form, which is readily available, has been found adequately effective and most convenient.

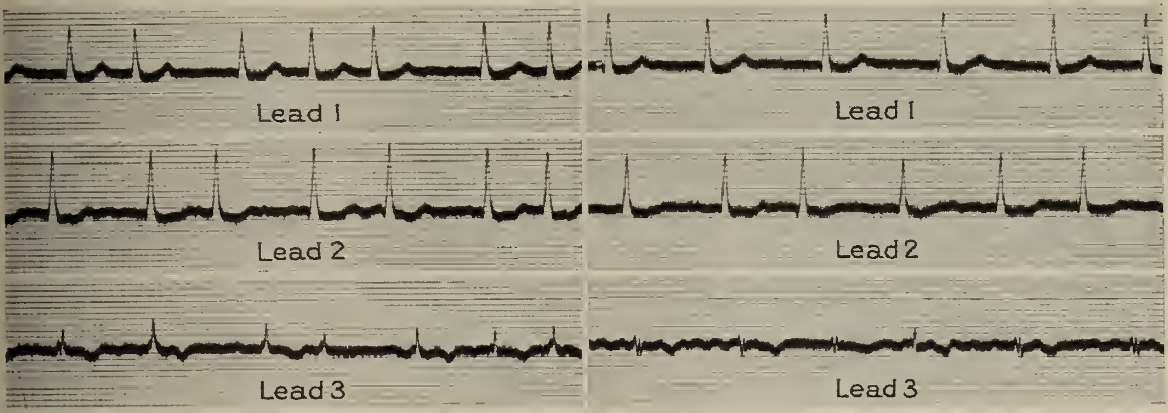
According to the clinical experiences of Cloetta,[11] Morin,[10] Groedel,[14] and the experimental investigations of Purdum,[16,17] the absorption of digitalis from the rectum is good and its action on the heart relatively rapid. It may not be amiss, in this connection, to briefly call attention to the course of the venous blood flow from the lower rectum. Approximately the lower two thirds of the rectum, where the suppository is usually introduced, is drained by the inferior and middle hemorrhoidal veins. All of the blood from the inferior hemorrhoidal veins and part of that from the middle hemorrhoidals finds its way into the inferior vena cava and thence to the heart. It is obvious, therefore, that when digitalis is given rectally the portal system is, in a large measure, avoided.

Engorgement of the portal circulation and especially the congestion of the digestive tract apparently predisposes to the nausea and vomiting that sometimes becomes so acute as to make oral dosage impracticable. Consequently, in order to overcome these unpleasant symptoms of intolerance it is necessary to relieve the congestion, and when this is done oral therapy may again become possible. As a further result of venous stasis the liver is not only greatly enlarged, but the circulation through it is sluggish, and its functions are disturbed. The advantage of avoiding the hepatic portal circulation in digitalis therapy lies in the fact that the liver alters some of the digitalis principles, removes some from the circulation, causes the excretion of some in the bile, and thus reduces the quantity of these substances reaching the heart. Since the rate at which the myocardium takes up the digitalis glucosides is a function of their concentration in the blood stream and the length of time they are permitted to act, the congested liver definitely interferes with digitalization by reducing the quantity of digitalis glucosides in the blood and by delaying their passage to the heart.

Thus, in myocardial failure the hyperirritability of the digestive tract and the adverse effect of the congested liver upon the digitalis principles quite actively tend to lessen the effectiveness of the oral administration of digitalis. Rectal therapy offers a means for overcoming the objections to oral dosage, since by this route there is no irritation of the digestive tract to cause nausea and vomiting, and the digitalis principles are, for the most part, carried directly to the heart.

Recently in treating two patients in an advanced stage of heart failure, in whom nausea and vomiting precluded oral digitalis medication, it became necessary to institute rectal therapy. For this purpose a suppository form of dosage so commonly employed in Europe appeared to solve my problem. I soon found, however, that there are only two or three preparations of this type available in the American drug market and that I had practically no choice of product. Since Digilanid suppositories have been very favorably mentioned in both American and European literature, I decided upon this preparation.

The limited bulk of the suppositories and the claim of the manufacturer that they are non-irritant on administration appeared to overcome the objections heretofore applicable to rectal therapy. The additional claim that the three active digilanid principles are maintained in the same percentage relationship at all times was a still further factor influencing my selection. The fixed composition of this product assured



Before Rectal Therapy
Ventricular Rate 118 Av.

After Rectal Therapy
Ventricular Rate 90 Av.

FIG. 1. Electrocardiogram, patient No. 6, before and after rectal digitalis therapy.

constancy of therapeutic potency and seemed to remove much of the indefiniteness of the usual digitalis products, since it permitted accuracy of dosage.[18,19] Although Digilanid[20] is also prepared in oral and parenteral dosage forms, my experience with it has been practically confined to the suppositories which I have successfully employed in 6 cases of congestive heart failure summarized below.

SUMMARY

1. Digitalis suppository medication was administered to 6 cardiac patients ranging from 35 to 59 years of age; 5 had hypertensive heart disease and 1 had rheumatic heart disease. All suffered from failure. Five of the cases had a normal rhythm and a pulse rate averaging between 85 and 100 a minute. One of the hypertensive cases was associated with auricular fibrillation with a rate averaging 118 a minute (see electrocardiogram, Fig. 1).

2. All of the patients were unable to take or retain digitalis by mouth on account of nausea or vomiting.

3. In preparation for rectal therapy the patient was first given a cleansing enema. The suppository was then administered and the patient instructed to retain it by resisting any defecation impulse for at least 4 hours.

4. To all patients 1 suppository was given 3 times daily for the first 2 days. Subsequently only 2 suppositories were administered for varying periods depending upon the degree of decompensation and the response to the medication (Table 1).

5. Oral therapy with the powdered leaf was then substituted and proved satisfactory in 4 cases. Two patients, 2 and 5, again showed symptoms of intolerance and had to resume rectal therapy on which they have continued for 7 weeks without ill-effect.

TABLE 1

NO.	NAME	AGE	DIAGNOSIS	DOSAGE	HEART RATE	
					Before	After
1*	M. G.	41	Chronic myocarditis, aortitis, hypertension.	3 suppositories for 2 days 2 suppositories daily for 4 days	85	85
2**	T. R.	35	Mitral stenosis and insufficiency.	3 suppositories for 2 days 1 suppository daily for 6 days	104	80
3*	J. T.	52	Arteriosclerosis, hypertension, aortitis.	3 suppositories for 2 days 1 suppository daily for 3 days	94	88
4*	B. M.	48	Aortitis, hypertension.	3 suppositories daily for 2 days 2 suppositories daily for 1 day	92	85
5**	J. R.	59	Coronary sclerosis, hypertension.	3 suppositories a day for 2 days 2 suppositories a day for 7 days	100	82
6*	G. A.	55	Chronic myocarditis, hypertension.	3 suppositories for 2 days 2 suppositories for 4 days	118	90

* Patients, 1, 3, 4 and 6 after the indicated period of therapy with Digilanid suppositories had improved to the degree that they tolerated oral therapy satisfactorily.

** Patients 2 and 5 continued intolerant to oral dosage and rectal therapy was resumed and has been continued now for 7 weeks.

6. In dosage and in time required for the induction of initial and full therapeutic effects, rectal therapy is practically identical with oral medication as has already been emphasized by Levine.[21]

7. General clinical improvement, manifested by improved breathing, diminished edema, lessened visceral congestion, increased urine output,

etc., was apparent in every patient. Nausea and vomiting promptly disappeared with improvement in the functional state of the myocardium.

8. No evidence of irritation or toxicity was observed in any of the patients.

CONCLUSION

This clinical report of 6 cases shows that the rectal administration of digitalis in suppository form offers a safe, simple, and satisfactory method of dosage that is especially useful in the presence of nausea and vomiting when oral medication is not feasible. For those patients who are free from nausea or vomiting while receiving rectal therapy but who vomit or who suffer from severe nausea when oral therapy is resumed, suppository medication may afford the only practical means of giving digitalis, and fortunately it can be depended upon to produce a prompt and full therapeutic response.

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NUTRITIONAL STANDARDS FOR NORMAL GROWTH*

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In the last two decades rapid advances have been made in the study of infant nutrition. These studies have been forced upon us, as it were, by the alarming decrease in breast nursing, especially in this country. In spite of intensive efforts on the part of organized medicine to revive a beneficent Nature's method of supplying the infant with all the growth requirements he needs, the total average time an infant is nursed at the breast has dropped from 5 months to less than 1 month! In other words, the great majority of babies in this country get not even 1 ounce of good breast milk! It is a safe prediction that if the pendulum is not soon started swinging the other way, a few years hence an infant suckling at its mother's breast will be seen only as a medical curiosity in the museum.

It cannot be denied that much good has come of the fact that most of the mystery of infant feeding has been dispelled by these nutrition studies. We now have a fairly accurate and scientific groundwork upon which to base our formulae. We know that the child has certain definite energy and vitamin requirements that must be fully met in order that he attain proper growth and development. He must be provided with energy for his basal requirements, his bodily activity, and to assure his normal growth. This energy is furnished to him in the form of foods and food value is expressed in terms of calories.

Caloric Requirement. During the first few weeks of life the caloric requirements are low, the daily needs being about 30 calories per pound of body weight. It is well that this fact should be kept in mind to prevent the altogether too frequent overfeeding of infants during this early period of delicate digestive function. During the balance of the first year the caloric requirements rise to 45 or 50 per pound, and thereafter decrease gradually to approximately 40 calories per pound at 6 years of age. The heavy infant can get along with less calories than that given to the average, while conversely the malnourished child needs more calories than the average. In other words, an underweight baby of 4 months should be given the calories he would need if his weight were normal. While of course an exact caloric requirement for the individual infant cannot be estimated, still if this method is followed it will furnish a good guide as to the amount of food needed, and no infant will be grossly overfed or underfed.

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* Read before the Society, January 19, 1938.

Fluids. A liberal supply of fluids is essential. It has been estimated that during the first year the infant should have 2½ to 3 fluid ounces per pound of body weight per day including the formula. If this amount is given water need not be forced between feedings. After the first year 1¾ fluid ounces per pound is sufficient.

Protein. An adequate diet must furnish protein which contains the units that make up the protoplasm of the body, namely, amino-acids. Of the 22 amino-acids which are found in proteins 10 are now known to be essential for growth and 12 are considered nonessential. Any protein which contains one or more of these essential amino-acids is known as a "complete" protein. The most perfect example of a "complete" protein is the lactalbumin of breast milk, which is a valuable source of essential amino-acids. The protein needs of the average infant are supplied by 1 ounce of breast milk per pound of body weight per day. On the other hand, it requires 2 ounces of cows' milk per pound because of the smaller amount of lactalbumin contained therein. The young, rapidly growing infant requires relatively a great deal more protein than the adult, and his milk diet should be supplemented as early as the fifth month, by the addition of simple animal and vegetable soups which contain protein molecules.

Fat. The body of the normal infant contains 12 per cent fat. The breast fed infant receives at least half his calories in this form. Therefore, although there is still need of considerable investigation relative to the metabolism of fat in the infant, we do know that it is a valuable source of heat and energy and of Vitamins A and D and that it provides certain essential unsaturated fatty acids that are necessary to proper nutrition. Here again the fat needs of the average infant are sufficiently met by 2 ounces of whole milk per pound of body weight per day. Bearing in mind that breast milk contains 4 per cent fat we should not allow the fat composition of artificial formulae to fall below 2½ to 3 per cent for any length of time if serious deficiency states are to be avoided.

Carbohydrate. Carbohydrates are the most reliable and convenient sources of energy available. The carbohydrate of milk is lactose. Cow's milk contains but a little more than half the amount of lactose found in mother's milk. Experience has shown that the infant's daily carbohydrate needs are best met by adding at least the same amount of sugar as is found in breast milk or approximately 1/10 ounce for each pound of body weight.

Minerals. Although not sources of energy, minerals are indispensable for life and growth. They are the chief constituents of the body fluids and play an important part in regulating most of the body functions as well as forming the greater part of the bony structures. Much of our food is deficient in minerals, due perhaps to faulty methods of manufacture and cooking. It has been estimated that 75 per cent of our population is deficient in minerals and vitamins.

Since mineral salts are being continually excreted they must be regularly supplied in adequate amounts with the food intake. The adult requires minerals for maintenance only, but the growing infant needs relatively much more for the construction of new tissues and body fluids. Breast milk and cow's milk furnish sufficient salts for the normal infant during the first few months of life, but it is now generally recognized that milk alone does not supply enough minerals (especially calcium and iron) after the fourth or fifth month. It becomes necessary therefore to give the infant simple mixed animal soups, vegetable purees and cereal gruels not later than the fifth or sixth month. Nutritional anemia or so-called "milk anemia" is common in babies fed on milk alone. Too early feeding, however, of these accessory foods and especially overfeeding, which is becoming altogether too popular, will result in cloying the infants appetite from satiation and thus defeat the very purpose for which they are given. The widespread use of canned foods in this connection is to be deplored. In spite of the extravagant claims of the manufacturers to the contrary it yet remains to be proved that these foods, some of which remain on the shelf for years before being used, retain their mineral and vitamin potency as safely as freshly prepared home cooked products. One manufacturer tacitly admits deterioration with age by "picking up" all cans that have not been sold within 3 years.

Vitamins.. Perhaps the most exhaustive studies in recent years have been concerned with these accessory factors of nutrition. Out of a maze of controversial arguments and exploitation we have emerged with a fairly accurate concept of the nature of these important aids to infant growth. At the present time we recognize 6 vitamins which must be furnished to the growing body in suitable form. Required amounts of each vitamin may be provided by including sufficient quantities of vitamin-containing foods in the formulae or in the diet. But this is not always practicable in the young infant, and it becomes necessary to prescribe supplementary prophylactic treatment in concentrated form and in minimum measured amounts to insure proper growth and prevent deficiency states. In this more modern way they are furnished in the form of standardized highly potent vitamin preparations. Those put out by ethical manufacturers only should be used; the field is wide open for unscrupulous commercial concerns, and quackery in advertising to the public is rampant.

Vitamin A prevents certain diseases of the eye, particularly xerophthalmia and night blindness. It also increases the resistance of the mucous membranes to infections, especially respiratory diseases. The most reliable food sources are fish-liver oils, such as those of the cod, tuna and halibut; animal fats, such as that of milk, butter, egg yolk, liver and kidney; and various vegetables, especially carrots, lettuce, spinach and tomatoes. In concentrated form it is usually given as cod-liver oil, and the optimum daily dose to protect infants under 1 year of age is 3 teaspoonfuls. If cod-liver oil is not well tolerated, the concentrate of Halibut-liver oil in doses of 10 drops daily may be substituted. A total daily intake (including that provided in foodstuffs) of 4,200 U.S.P. Units is required in children under 4 years of age.

Vitamin B promotes appetite, prevents nervous disturbances, and protects against beriberi. It is widely distributed in nature, being found in vegetables, fruits, milk and cereals. It is particularly abundant in brewer's yeast and in wheat germ. This latter source has been recently utilized by manufacturers of certain cereals which are rich in this vitamin factor and which should be supplied to the infant as early as the fourth or fifth month. If necessary a compressed tablet of brewer's yeast of high Vitamin B potency can be added to the daily diet. An estimated intake of 150 International Units per day is required by children under 4 years of age.

Vitamin C prevents and cures scurvy and aids in the formation of good dental structure and healthy gums. Its most abundant source is the juice of citrous fruits, particularly orange juice. Other foods containing a high amount of this vitamin are tomatoes, raw or canned, raw cabbage, potato, and green vegetables. It should be started in breast fed infants by the third month and in the bottle fed ones a month earlier. A total daily intake of 150 International Units is desirable to protect the infant, and this can be supplied in 1 to 2 ounces of orange juice or tomato juice. In some allergic infants who do not tolerate the vitamin in this form it may be given in tablet form as pure cevitamic acid, a 1/10 gram tablet daily being sufficient.

Vitamin E. This concerns us but little in pediatric work, but is considered essential for normal reproductive processes. Its most abundant sources are the leafy green vegetables, such as lettuce, spinach, and water cress, and also egg yolk, wheat germ, and beef.

Vitamin G. Excellent sources of this vitamin are liver, kidney, yeast, eggs, wheat germ, and green vegetables. It is supplied to the infant at an early age incorporated in these foods and is considered essential for the prevention of certain deficiency states, especially pellagra and acrodynia. Concentrated forms of Vitamins E and G have not been successfully developed.

Vitamin D. This vitamin prevents and cures rickets, tetany, and osteomalacia. It is an important factor in sound dentition and controls the calcium and phosphorus metabolism of the body. The chief sources are summer sunshine, cod-liver oil, other fish oils, and egg yolk. Unlike other vitamins it is rarely found in foodstuffs, and hence must be supplied to the infant in other forms. The daily intake for adequate protection should be 600 U.S.P. Units, which is the equivalent of 3 teaspoonfuls of standardized cod-liver oil. A substantial number of infants have an intolerance for cod-liver oil and it should not be forced upon them, even though it is now generally recognized as perhaps the best source of Vitamins A and D. When given in such large amounts it frequently causes anorexia and diarrhea. In such cases irradiated ergosterol or Vitamin D concentrate in doses of 10 to 12 drops daily should be substituted. It must be admitted, however, that clinical results with the concentrated Vitamin D products have not proved as successful as was anticipated by some workers a few years ago. Hence there is a tendency to go back to the cod-liver oil of our fathers. The objections to its use can be considerably lessened by giving the infant or child rest periods of a week in each month, and it should be omitted entirely during the hot summer months, since it is not only unnecessary but may be positively harmful to the digestive system.

The most reliable and efficient source of Vitamin D is being neglected at the present time, namely, sunshine. An infant whose body is exposed to the sunshine or some other source of ultraviolet radiation does not need this vitamin, hence the value of regulated sunbaths or exposure to ultraviolet lamps at regular intervals. In these days of "walk up" apartment houses and working mothers there are many infants who never get out into the open for weeks at a time. Is it any wonder we have a class of anemic-looking patients whom we call "apartment house babies"? A minimum of 2 hours a day in the open should be insisted upon winter and summer. A very interesting survey by the American Dental Association, recently completed, shows that dental caries among children in northern states is 50 per cent more frequent than in the southern states. This is due not only to the larger proportion of industrial communities in the north with their smoke-laden atmospheres but more so to the shorter hours of sunshine in the northern communities.

Vitamin D should be started as early as the first month in bottle fed infants and should be continued at intervals throughout childhood. The tendency to rickets diminishes rapidly after infancy, but the growth of bones and the development of teeth continues. It has been shown that these structures develop with less deviation from normal if the administration of cod-liver oil is continued up through the sixth year.

We should be on our guard against quackery in the use of this vitamin. We should prescribe only ethical standardized preparations from reliable manufacturers if we expect to obtain high vitamin potency. We should remember that cod-liver oil preparations lose their potency with age and exposure to light. We should discourage the popular use of cheap ultraviolet lamps which have no more violet ray value than the moon. We should encourage more use of freshly prepared foods and considerably more utilization of Nature's real Vitamin D—Sunshine!

MANAGEMENT OF VESICAL PARALYSIS

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The problem of the paralyzed urinary bladder is intricate, urgent and vital, requiring immediate action on the part of the physician regardless of the etiological factors involved. In most early cases the kidneys are functioning normally but the bladder is unable to share its physiological burden of emptying. If we consider the bladder a muscular organ with a very delicate neurological control, with its components essentially working against one another, namely, the efforts of the detrusor muscle to overcome a closed sphincter resulting in urination, it is then easy to realize that numerous factors can disturb this intrinsic mechanism. The neurologists have described many definite organic lesions often responsible and all of us realize the psychological influence on normal bladder function.

Proper management depends entirely on the diagnosis, which is usually achieved by genitourinary examination, neurological findings and complete laboratory studies. The chief urinary symptom ranges anywhere from dysuria and incontinence to complete retention and is often attended by other neurological disturbances, such as pain, abnormal reflexes, hyperesthesia, anesthesia, etc. Residual urine is measured by catheterization. If catheterization is contraindicated, the residual urine may be visualized by excretion urography. The patient is asked to void before the last X-ray film is made. The final X-ray film then graphically shows the amount of residual urine. The question may come up at this time whether the bladder cannot empty itself because of organic obstruction or true paralysis. Both conditions can exist in the same patient. Obstruction may be ruled out by cystoscopy. The position of the scope and the ease with which it passes the cutoff muscle, hiatus of the sphincter, atony and trabeculation of the bladder wall all point to paralysis if there is no obstruction. If obstruction is present, as from a hypertrophied prostate, the Blasucci test will rule paralysis in or out. This consists simply of intubation of the membranous urethra by means of a short tube with a string attached. If urination is thus accomplished paralysis and not true prostatic obstruction is present. To be even more accurate, cystometry should be performed. This is a method of evaluating the tonus of the detrusor muscle. The bladder is simply connected to a manometer and different amounts of fluid injected into the bladder. Sensory points are also elicited from the patient, namely, "desire to void," "pain," and "severe pain." This addition to the manometric record differentiates the true or neurogenic from false or non-neurogenic bladder.

The neurological consultation is very important. Other nerve lesions are often more than of mere academic interest. Complete blood studies for the anemias, Wassermann tests, etc., are necessary. The spinal fluid should be examined completely, especially for the specific serological reaction and Lange's colloidal gold curve. Often the Quackenstadt test may be enlightening. X-rays are specially pertinent for spina bifida, injury, tumor, and metastases. Cystograms taken while the patient is attempting to void are sometimes a great help. The funnel deformity of the tabetic may be demonstrated.

The diagnosis being made or the case still being undiagnosed, we have the patient with complete bladder dysfunction. What are we going to do about it? The first step of practical importance is to empty the bladder. This may be encouraged in every way by homemade methods, such as listening to the sound of running water; application of heat in the form of electrical pad, hot water bags, hot enemas and douches, and stoupes; forcing of fluids; administration of diuretics; use of the patient's own abdominal muscles and manual pressure over the pubis. With retention persisting with this and numerous other household remedies, there is but one recourse, namely, drainage of the bladder by intermittent catheterization. The intermittent method is stressed, since it gives the patient an opportunity to renew attempts at normal urination. There is an exception to this rule, namely, transverse myelitis, the classical example of which is the fractured spine. It is easy to understand here the futility of any attempts on part of the patient and the danger of infection from the catheter. The patient's immediate problem is now solved. What is next?

The second step is removal of the etiological factor if possible. This is often within the field of the neurosurgeon. The results are brilliant in some cases, such as early excision of the scar in spina bifida, laminectomy for the relief of the cord lesions and especially removal of a cord tumor, etc. Cases such as posteriolateral sclerosis due to pernicious anemia, "cord bladder" due to diabetes mellitus and tabes dorsalis, among numerous others, belong to the realm of the medical man. Antiluetic treatment so far as the tabetic "cord bladder" is concerned is unsatisfactory.

Symptomatic treatment must be instituted when the cause cannot be removed. Drug therapy is important, such as urinary antiseptics by mouth to prevent infection; here urotropin is the drug of choice. The tendency for the formation of alkaline stones is very great, and keeping the urine acid is a rational preventive measure. Sodium acid phosphate, ammonium chloride and mandelic acid therapy keep the pH within proper limits. In neuritic cases one should use a diet rich in Vitamin B and G supplemented with prepared vitamins. Because of the chronicity of these cases, narcotics for pain must be used with great care. Their use is justifiable when there is great temporary distention. The acetylcholine drugs are used by mouth and hypodermically as parasympathetic stimulants to encourage micturition. Mecholyl and ergotamine tartrate (Gynergen) come in this class. These are often successful. The results are not always permanent, however, but even so they are good for temporary relief and are a fairly reliable guide as for the indications for presacral resection. Bromides are given for their sedative and motor depressant action.

Dilatation of the urethra is important. It stretches the sphincters and should be carried up to at least No. 34 French size in either male or female. Cutting of the sphincter muscle in some instances may be contemplated. This is done with the resectoscope, but only after the patient has been warned as to the subsequent danger of incontinence. Presacral sympathectomy may be indicated, preferably when sphincter is intact. However, although successful in most instances, it has some dangerous sequelae. In the male sterility occurs through loss of the power of ejaculation. In both sexes the ureteral orifices are sometimes rendered patent and therefore vulnerable to ascending infection. It must be remembered that some time follows this operation before the bladder functions normally with reëducation of nervous control.

In hopeless cases with intelligent patients instructed in asepsis, self-catheterization may add to their comfort. We must resort in many instances to permanent drainage by the indwelling catheter. I have a patient now who has been wearing a catheter for 9 years with comfort. He urinates "ab lib" by pulling out a "ready golf tee" from the end of a soft rubber catheter. His bladder infection is well controlled by methanamine, and I can only explain his comfort by sensory-fiber disturbances due to cord lesions. In other cases in which the urethra is intolerant or the trophic nerve destruction is marked, permanent drainage by cystostomy is indicated. In certain fractured cord cases the bladder is let alone and allowed to become "automatic." In about 4 days an overflow develops, and on about the tenth day the bladder begins to empty itself periodically. These intervals may be gradually increased as time goes on.

In general, in 73 per cent of vesical paralysis the bladder and kidneys are infected and death occurs from pyelonephritis. Munro[1] has reported a large series of cases in which only 15 per cent were infected by a method of "tidal drainage." The bladder is drained by catheter into a closed aseptic system which is adapted to the type of bladder. Intravesical pressure is controlled when decompression is necessary.

In closing, I would like to say that we are dealing with a general medical problem. Proper management is best achieved by coöperative efforts of the medical man, the neurologist, and the surgeon. If there is any doubt as to any procedure, conservatism is a great virtue.

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ABSTRACT OF PAPER READ BEFORE THE SOCIETY*

"The Clinical Use of Vitamin B_1 and Absolute Alcohol Intraspinally: Some Experimental Observations," **Elias Lincoln Stearn, M.D.**, New York City.

Spinal segmental densensitization is the process of blocking the impulses which pass through the dorsal nerve roots on their way to the spinal cord and brain. While ordinary spinal anesthesia may produce segmental desensitization lasting a few hours, the blocking effect of alcohol may last as long as 1, 2, or 3 years. Because alcohol can be localized at the region of injection, whereas ordinary spinal anesthetics are quickly diffusible, the action of the alcohol can be confined to 2 or 3 segments on one side. The degree and extent of alcohol desensitization can be varied by the dose and technic used in the injection

In addition to the hyperesthesia which results from such an injection, there is a depressant effect on the related portion of the sympathetic nervous system. Not only are the somatic and sympathetic regions innervated by the blocked nerve roots desensitized by this method, but also the corresponding segments within the spinal cord itself, since the total number of afferent impulses received by the spinal cord may be more or less permanently desensitized.

The patients injected may be classified in four groups: (1) cancer, (2) peripheral vascular diseases, (3) spinal-orthopedic diseases, and (4) miscellaneous. One hundred and three patients have been treated by alcohol injections. Some of the patients have received several treatments so that a total of 193 injections have been done. Of the 50 patients with cancer given alcohol injections for relief of pain, approximately half received complete or almost complete relief. A fourth of the patients received about 50 per cent relief. Satisfactory results were also obtained in the other groups. Among the diseases treated successfully in the miscellaneous groups were angina pectoris, herpes zoster, intercostal neuritis and asthma. The most frequent complication was bladder and rectal incontinence. This was noted most often when the alcohol was placed between the second and third lumbar spines and when more than 16 minims of 95 per cent alcohol was injected. Bladder and rectal incontinence occurred in 8 cases and bladder dysfunction alone in 6 of the first 150 injections.

In summary, it may be said that intraspinal alcohol therapy is valuable in relieving intractable pain in cancer, neuritis and neuralgia, and is of value in treating such disorders of the sympathetic nervous system.

The second part of the paper deals with subarachnoid injections of vitamin B_1. That vitamin B_1 is the antineuritic vitamin, that its absence from the diet causes the disease beriberi, which may prove fatal if untreated, that lack of this vitamin may cause inflammation (neuritis) of nerves in any part of the body with marked peripheral and central degeneration, are all accepted facts and well known. Since vitamin B_1 taken by mouth, by rectum, subcutaneously, intramuscularly, or intravenously may not reach the nervous system because of digestion or neutralization by the alkaline intestinal contents, or neutralization by general alkalosis, or because of barriers in diseased choroid plexuses, it was decided to give it by spinal puncture. One hundred and twenty intraspinal subarachnoid injections of synthetic vitamin B_1 in doses of 500 to 50,000 International Units, (1 to 100 mg.) were given to 28 patients. Given intraspinally, the beneficial results appear much quicker than when given by other routes. After intraspinal injection of vitamin B_1 improvement in various degrees was noted in all cases. All felt better and looked better. Appetites were increased, pain was lessened or abolished completely, muscular control improved, speech and gait improved, joints became looser, libido was increased, diplopia corrected. Treatment should start with 10 mg. and be increased every fourth to seventh day. Doses over 20 mg. may cause elevation of temperature, weakness, and buzzing in the ears. The cases treated were inoperable cancer, 10; von Recklinghausen's disease, 1; multiple sclerosis, 2; degeneration of the pyramidal system of unknown etiology, 1; thromboangiitis obliterans with pregangrenous condition of feet, 1; duodenal ulcer with pulmonary tuberculosis, 1; alcoholic neuritis of the supraorbital nerve, 1; neuritis of the sciatic nerve, 1; cardiac decompensation with uremia and anuria, 1; tabes dorsalis, 1; hypertrophic spondylitis, 2; osteoporosis of the spine, 1; Paget's disease, 1; intractable pruritus ani and vulvae, 2; beriberi, 1; and acute poliomyelitis, 1.

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IS ORGANIZED MEDICINE ON THE DEFENSIVE?

With the developing trend toward paternalism the masses of the American people have been encouraged more and more to expect something for nothing. The stress of current economic trends has produced no abatement of this attitude, and while government employees clamor for and are promised the five-day week with annual leave, sick leave, and retirement benefits; labor organizations for the forty-hour week, etc.; the doctor works long hours and is available, or expected to be available, twenty-four hours of the day.

In reference to the trends in medical economics, certain misguided philanthropists (unfortunately including some doctors who dwell upon the exceptional things), have aided certain equally misguided efforts which have given impetus to attempts to deliver to the people very costly medical care for little or nothing.

Naturally everyone is interested in the real answer to the problem of how to meet the high cost of medical care. The conclusions as to the cause of the high cost are strikingly variable when expressed by the representatives of the many different groups concerned. Actually many related things are the cause. Deliberate and coöperative action, particularly on the part of organized medicine and its allied agencies, is necessary to reduce this cost wherever reduction is possible. An open analysis of the problem with the coöperation of the public will help to do what can be done. Medical care will be expensive whether paid for directly as fees or indirectly as taxes.

In the District of Columbia, counsel is acting for the Medical Society to sound out the legality of Group Health Association, Inc., of the H.O.L.C. Already the local press has shown some hostility and antagonism, and this attitude is developing in a public usually sympathetic to physicians, probably because we have not taken time to inform them of the facts. These undesirable results of our efforts are not pleasant to contemplate. They will increase and they will contribute nothing to the solution of the problem of the cost of medical care.

As controversial problems of medical economics arise due to misunderstandings we should be eager to give and continue to give the facts to the public. This is the extent of our obligation and our greatest strength. Resort to legal strategy will lead to a battle in which technicalities are our weapons, and it would be an admission of weakness which needlessly puts us in the position of having to defend ourselves. This in turn excites prejudice against us which we do ourselves an injustice to invite, and if we must defend ourselves on a basis of bias we deserve to be buried with it. The excitement bordering on hysteria in some quarters as indicated by numerous special meetings of medical societies and the submission to the press and public of various inadequate recommendations and proposals indicate a lack of deliberation of which many units of our medical organization need not be proud. These "half-cocked" procedures put us in the position of showing undue apprehension and only serve to break down our morale. It might be observed that these controversial problems about which we are alarmed are not new. They are only new to those who have just begun to think about them.

Is the cost of medical care too high? Has organized medicine any obligation to help reduce it? If so, let us reduce it; if not, why should we permit ourselves to be put on the defensive, as obviously we are, in this matter? Let any of us consider an average case under our care. Is it our fee which makes the care costly? If the total care is costly not because of our fee have we any direct or indirect responsibility in reducing the cost?

During the past eight years the majority of us have been responsive to the economic trends; we have stepped down our fees. During this time the cost of nursing care has increased, laboratory charges have remained rather rigidly fixed, many needlessly high; X-ray studies have remained expensive, many disproportionately so; the material things, such as intravenous fluids, drugs, etc., are expensive; biological products sometimes cost more for one dose than the fee of the doctor; commercial control of patent rights continues to keep the cost of certain drugs, biological products and indispensable instruments, etc., high, and charges incident to blood transfusions are often almost prohibitive. These are merely examples of a great list of costs in the agencies collateral to medical practice which add a great load to the burden. Many of these costs are too high. Many can be reduced. Some can not be reduced. Why does the membership of the American Medical Association go on the defensive in the face of these facts? They should not be on the defensive if they do not condone or contribute to them. The obligation of organized medicine is to help reduce them. To turn indifferently from them will not be wise.

As an example of our methods of meeting this obligation we have established criteria for fee charges in the care of insured and compensible injuries. A further application of this principle where we can control or can influence it would seem to be our obligation.

From the standpoint of organized medicine there is a common ground upon which to compose the many differences of opinion existing because of the great medical economic problem, but experience dictates that while doing so the following principles and obligations must be before us:

1. To educate and propagandize the press and the public in a non-aggressive, non-controversial way, but with a definite routine and continuousness as to facts pertaining to the cost of medical care.

2. To coöperate and make effort to reduce medical cost wherever possible over a broad cross-section of the professional and allied medical agencies, particularly by (a) clarifying with the public, the press, and the federal and state agencies our position and the responsibility of these public agencies in the care of the indigent, and (b) by establishing by adequate study, insofar as it is practical for the more usual services, the professional fee tables and other criteria for equitable units of charge for patients in the lower income brackets of established limits, comparable to compensation practice fee tables so widely accepted.

3. To establish as public fact that we have no obligation to people of ample means and that we even as other professions are entitled to enter into such proper arrangements for professional care as are mutually acceptable.

4. To oppose by united action anything that compromises or embarrasses our American right to exercise our professional privileges as licensed medical practitioners.

J. H.

TRANSACTIONS OF THE WASHINGTON SOCIETY OF PATHOLOGISTS

The meeting of the Washington Society of Pathologists was called to order at 1:30 P.M., Saturday, March 5, 1938, in the Army Medical Museum by the President, Dr. Oscar B. Hunter. There were 16 members and 2 guests present. Dr. George J. Brilmyer was unanimously elected a member of the Society.

Presentation of Cases

Dr. H. H. Leffler presented 25 slides from the case of a 41-year-old colored woman who entered the hospital, February 12, 1936, complaining of a mass in the right breast, which had first been noticed 3 months before. It had increased from the size of a lemon to the size of a grapefruit. The patient had been occasionally nauseated and had vomited at times. Physical examination revealed both breasts pendulous and flabby, and in the right breast a mass which was painful and had a cystic feel. The blood pressure was 210/130. The clinical diagnoses were cystadenoma of the breast and hypertension. The Kahn test was negative. The hemoglobin was 70 per cent and the white blood cells numbered 20,000, with 83 per cent polymorphonuclear neutrophiles. On February 21, the patient was operated upon and a degenerated cystic tumor was removed which was thought at the time of operation to be an abscess. The pathological report revealed a malignant neoplasm and the next morning the patient was again operated on and the entire breast removed, together with the glands in the axilla. Four hours later the patient was dead. Autopsy was not permitted. The cystic tumor which was first removed measured roughly 16 cm. in diameter and contained a large cavity about 10 cm. in diameter filled with necrotic material. A section through the wall of this cystic mass showed anaplastic malignant structure. The breast and lymph nodes on histological examination showed varying degrees of chronic inflammatory reaction but no malignant change could be found. The diagnosis was carcinoma of the breast. The large size of the cells and the possible origin, such as epidermoid, nevus, or gland, were discussed.

Dr. Walter Freeman presented 25 slides from the case of a 5-year-old white boy who developed headache and vomiting about the first of November, 1937. He tired easily and was unsteady on his feet. In less than 2 months he had lost 8 pounds and was treated by his physicians without improvement. He was seen December 29, 1937, at which time engorgement of the blood vessels of the ocular fundi, a definite abnormality of the optic discs, exaggerated knee jerks, and an unsustained ankle clonus were noted. On examination, January 2, 1938, bilateral choked discs of 3 to 4 diopters were found, with engorgement of veins and obliteration of disc margins. There was marked ataxia, chiefly in the lower extremities and a positive Babinski's sign on the right. The patient was operated on January 3, 1938, and a midline cerebellar tumor about the size of a golf ball arising in the vermis and occupying the entire fourth ventricle was found. Approximately half of the tumor was removed. During the 3 weeks the patient was in the hospital after the operation he gained 6 pounds and has continued to gain weight since. He has had no headaches or vomiting, and his general condition has greatly improved. After re-examination of the patient on February 17, it was reported that whereas before operation the child could not see the largest figure on the chart, "now he can read within 2 lines of normal with his right eye and can read the first 3 lines with his left eye." He found no evidence of choked disc and except for some blanching of the discs, the fundi looked quite normal. There was no paralysis of the extra-ocular muscles, no nystagmus, and no other change in the fundus or in the anterior segment of the eye. The tumor was of somewhat irregular formation, being more cellular in some parts and more fibrous in others. The individual cells contained nuclei that were oval, stained with moderate intensity and showed processes coming off from the poles. Some of these processes were attached to the vascular sheaths. There is not the plate-like or laminated arrangement that one finds in the astroblastoma, nor the uniformity of cell size and type with pseudo-rosettes to suggest the common medulloblastoma. The occurrence of fibrous astrocytes is well shown in the Holzer preparation, and the tumor seems to be made up predominantly of these. The blood vessels appear to be relatively mature, and there are no areas of hemmorrhage or necrosis aside from those occasioned by the excision of the tumor. The diagnosis was fibrillary astrocytoma.

In the discussion this tumor was considered a fibrillary astrocytoma chiefly because of the large number of fibrils that stained with the Holzer stain. A medulloblastoma would consist of smaller cells and show pseudo-rosettes. In a spongioblastoma (glioblastoma) multiform one would find areas of necrosis surrounded by small cells with palisading arrangement. A diagnosis of endothelial or vascular origin could not be justified because of the fairly well differentiated blood vessels.

Captain R. M. Thompson presented 25 slides, a gross specimen and photomicrographs from the case of an American-born white man, aged 58 years, who was admitted to the hospital on July 29, 1937. The patient had had malaria in 1914 and an appendectomy in 1919. His general health since then had been good until about 1936 when he noted that he was gradually becoming weak and losing weight, and that his tongue was enlarging in size and was painful, especially when eating. He also noticed difficulty in breathing upon exertion, a constant dull ache in the epigastrium, and dull muscular pains. These symptoms increased in severity. Three months before admission he developed swelling of the cervical lymph nodes, small firm nodules in the skin which varied from 1 to 2 cm. in diameter, and swelling with pain in the finger and knee joints. On examination the patient was very much undernourished. Temperature, pulse and respiration were normal. The blood pressure was 140/90. The tongue was greatly enlarged, slightly furrowed and contained small, scattered petechial hemorrhages. The skin was darker than normal. Small firm nodules, varying from 1 to 2 cm. in diameter, were noted in the subcutaneous tissue. These were most numerous in the arms, legs and back, and were tender. The cervical and axillary lymph nodes were enlarged. The finger and knee joints were swollen and painful. There was a gradual progression and accentuation of all symptoms. The tongue enlarged to the extent that it filled the entire oral cavity and swallowing and speech were impossible. Artificial feeding was impossible because catheters could not be passed below the posterior pharynx. Cachexia became more and more pronounced. The hands and feet became swollen, and occasional small petechia appeared on the hands. Muscular atrophy in general became very evident, particularly of the hands. Repeated Wassermann and Kahn tests were negative. The urine showed a specific gravity ranging from 1.012 to 1.020 with albumin of grade 1 to 2 plus. The hemoglobin fell to 50 per cent and the red blood cells to 2,840,000; the white blood cell count was 7,000, with 66 per cent polymorphonuclears, 31 per cent lymphocytes, and 3 per cent monocytes. Death occurred on November 11, 1937, 105 days after admission. At autopsy 24 hours postmortem, the body was found to be greatly emaciated. The oral cavity was entirely filled with the enlarged tongue, the surface of which was irregular, furrowed, ulcerated and showed petechial hemorrhages. On removal, the tongue was found to be firm, molded to the shape of the open mouth, and on section had a translucent homogeneous appearance. Microscopically the squamous epithelium was very atrophic. Amorphous hyalin occurring in billowy masses appeared in the muscle and in the vessel walls. Special stains identified this hyalin as amyloid. Almost every organ in the body was affected, the brain excluded, but outside of the tongue the infiltration was largely limited to the vascular elements. This case seems to be one of systematized amyloidosis, probably "primary" in the tongue, and is very similar to those described by Lubarsch and others since 1929. It is a definite pathologic entity, although quite rare.

In the discussion it was noted that the cause of this condition is not known. There was no chronic disease in this patient, as is usually noted in patients with diffuse amyloidosis. The organs usually affected with the amyloid deposits, namely, the spleen, liver, kidneys and suprarenals, were the least involved in this case. Besides the tongue, heavy deposits of amyloid were found in the lungs, heart, gastrointestinal tract, genitourinary tract, muscles, skin and all the serous membranes.

Drs. George Tolstoi and Oscar B. Hunter presented 25 slides from the case of a white woman, aged 63 years, who for the past year has been gradually losing weight. The abdomen had been getting progressively larger, and in July of 1937 exploratory laparotomy revealed an inoperable tumor. A biopsy was taken but the section of tissue was not representative. X-ray therapy was given, but the symptoms and signs showed no abatement, and in January of 1938 the patient expired. Necropsy revealed that the tumor mass was quite extensive in the retroperitoneal region but also filled the largest part of the abdomen, with metastatic nodules in the liver and lungs. The neoplastic tissue was grayish white, firm and fleshy. A piece of tissue from the original laparotomy suggested that the diagnosis lay between that of a reticulum-cell sarcoma and a nondifferentiated type of neuroblastoma. Because it was such an extensive mass the origin was obscure. It seemed to cover the aorta and the vena cava. There was no bone erosion but rather considerable necrosis around the kidneys and in the retroperitoneal fat surrounding the adrenal glands on both sides.

In the discussion the diagnosis was considered uncertain.

Drs. Tolstoi and Hunter presented also a microscopic slide and a gross specimen from the case of a 44-year-old man who had consulted his physician about 6 months prior to his death complaining of blood in his urine. Upon cystoscopic examination the bladder was found to be filled with mucoid material and had the appearance of a granulomatous degenerative process. After a week he had passed a large amount of mucoid material from his bladder. Examination showed a perfectly clear bladder with no tumor, stones or ulcer. After renal hemorrhages persisted a pyelogram was taken which showed a very peculiar circular-like shadow and no calices. A diagnosis of hypernephroma was made. Deep X-ray therapy was instituted, and the tumor decreased to less than half its size. One month prior to death the patient developed choking of the optic discs, blindness and signs of mental deterioration. The anatomic diagnoses were hypernephroma of the left kidney without regional metastasis and metastatic hypernephroma of the right lobe of the cerebellum.

Discussion brought out one opinion that the hypernephroma had metastasized to the brain and also an opposite view that the brain tumor was a primary angioma.

Dr. Roger M. Choisser presented a microscopic section from a nodule in the omentum of a 55-year-old man who had been having gastro-intestinal symptoms for the past year or two. On palpation of his abdomen some nodular areas had been felt, and an exploratory laparotomy was performed. The lymph nodes were enlarged, and there were also numerous little hard nodules of the omentum. The surgeon diagnosed the case as one of Hodgkin's disease and so notified the family.

In the discussion the etiology was generally considered to be inflammatory—a granulomatous inflammation, perhaps from fat necrosis or possibly tuberculous.

Dr. L. L. Ashburn presented a microscopic slide from the case of a white man, aged 43 years. On December 9, 1937, he had complained of upper abdominal pain. On December 12 he had noticed swelling of the abdomen which had become progressively more severe so that on December 21 he had entered the hospital. His liver was palpable 4 fingerbreaths below the right costal margin and had a rounded, moderately irregular edge. The abdomen was distended. Shifting dullness was present. The erythrocytes numbered 4,550,000 and the leukocytes 68,200. The Wassermann test was 1 plus. The urine showed 1 plus albumin, 4 plus hyaline casts, 2 plus coarsely granular casts, and 3 plus finely granular casts. An X-ray plate of the abdomen showed the diaphragm raised to the first intercostal space. The diagnosis of cirrhosis of the liver was made. At autopsy (limited to the abdomen), the right lower lobe of the lung was found collapsed, a small portion being removed through the diaphragm. The liver was enlarged, firm and cut with increased resistance. The pathologic diagnoses were subacute interstitial hepatitis with cirrhosis, acute splenitis, infarction of the kidney. The findings in the liver were interpreted as being of inflammatory origin, the cirrhosis representing the attempt at healing, the spleen picture as well as the blood count being consonant with this view. There was no evidence of alcoholism.

Lieutenant Colonel J. E. Ash presented a slide from the case of a 17-year-old boy who had fallen on the ice, after which he was quite lame and developed a tumor of the thigh. X-ray study several weeks later showed no evidence of bony connection, but the tumor mass was palpable, and the surgeon cut down and found a mass which on opening exuded an ounce or so of blood clots. The tumor was adjacent to the femur at about the upper third. The clinicians thought it was malignant and had suggested amputation. Microscopically there was rather regular new-bone formation surrounded by muscle and a slight inflammatory reaction.

In the discussion callus formation and myositis ossificans were considered. All agreed upon a benign process. (Dr. C. F. Geschickter has since diagnosed this as myositis ossificans.)

The meeting adjourned at 4:15 P.M.

CALENDAR FOR COMING MEETINGS

Thursday, April 28: *Section on Pediatrics.*

1. "Anatomy and Neuroanatomy of the Extrinsic Muscles of the Eye." George B. Jenkins, M.D.
2. "Neurology: Fusion, Stereopsis and the Breakdown of the Neuromuscular Mechanism." G. Victor Simpson, M.D.
3. "Amblyopia." Ernest Sheppard, M.D.
4. "General Discussion of Squint: Its Etiology, Symptoms and Treatment." William Thornwall Davis, M.D.

Wednesday and Thursday, May 4 and 5: ANNUAL SCIENTIFIC ASSEMBLY OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA

Guest speakers will include:

William P. Healy, Ph.B., M.D., New York City. Graduate of Johns Hopkins University, 1900; Gynecologist, Memorial Hospital.

Roy Upham, M.D., F.A.C.S., New York City. Associate Professor of Medicine, New York Medical College; Consulting Gastroenterologist, Flower-Fifth Avenue, and Metropolitan Hospitals.

Perrin H. Long, M.D., Baltimore, Md. Associate in Medicine, Johns Hopkins University School of Medicine.

The Program

Wednesday, May 4, 9 A.M.

Registration.

Scientific Session.

Motion Picture: "Human Sterility." Paul Titus, M.D., Pittsburgh, Penna.

"Artificial Insemination." Walter R. Stokes, M.D.

"Creeping Eruption." I. Lewis Sandler, M.D.

Motion Picture: "Micro-polychromar." Roy Lyman Sexton, M.D., Richard E. Dunkley, M.D., and Alan Frank Kreglow, M.D.

"Secondary Syphilis Lesions." (Lantern slide demonstration.) H. H. Hazen, M.D.

"Chronic Sinusitis in Children: Diagnosis and Treatment." P. A. McLendon, M.D.

"Old Insulin and Protamine Zinc Insulin in the Treatment of Diabetes Mellitus." (Illustrated with lantern slides.) William J. Mallory, M.D.

Motion Picture: "Eye Surgery." Ramon Castroviejo, M.D.

Wednesday, May 4, 12:30 P.M.

Complimentary Luncheon for all registrants held at Mayflower Hotel.

Guest Speaker: The Honorable Hatton W. Sumners, Chairman, Judiciary Committee of the House of Representatives.

Subject: "Natural Laws in Government."

Wednesday, May 4, 2 P.M.

Scientific Session.

"New Trends in Diseases of the Stomach." Roy Upham, M.D., New York, N. Y.

"Rectal Diseases of Interest." Garnet W. Ault, M.D.

"Barium Enema as the Most Accurate Procedure in the Diagnosis of Pathology of the Colon." Claude Moore, M.D.

"Important Preoperative Considerations in Biliary Surgery." Edmund Horgan, M.D.

Motion Picture: "Diseases of the Breast." Jacob Sarnoff, M.D., New York City.

"Mental Disorder as Seen in General Practice." Winfred Overholser, M.D., Superintendent, Saint Elizabeths Hospital.

"The Treatment of Rheumatoid Arthritis." Walter K. Myers, M.D.

"Hopeful Trends in the Management of Deafness." Victor R. Alfaro, M.D.

"Who is Responsible for the Medical Care of the People?" Arthur C. Christie, M.D.

Wednesday, May 4, 8:15 P.M.

Public Meeting.*

"Western Medicine in China." William R. Houston, M.D., Austin, Texas.

Thursday, May 5, 9 A.M.

Scientific Session.

Medical Dry Clinics

Motion Picture: "Trigeminal Neuralgia. (Pre- and Postoperative Cases)." From the Neurosurgery Section of the Mayo Clinic.

"Criteria for the Early Diagnosis of Cancer of the Stomach with Critical Analysis of the Value of Flexible Tube Gastroscopy." Fred A. J. Geier, M.D.

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* Don't fail to give wide publicity to this meeting to your clientele.

"Acquired Interventricular Septal Defects. Report of a Case with Specimen." B. W. Leonard, M.D.

"A Program for the Prevention of the Common Communicable Diseases." Perry W. Gard, M.D.

"Avitaminoses as Observed in Private Work." Matthew W. Perry, M.D., and Austin B. Chinn, M.D.

Surgical Dry Clinics

"Erythromelalgia." W. Warren Sager, M.D.

"Saddle Thrombus at the Bifurcation of the Aorta." W. Ross Morris, M.D.

"Raynaud's Disease." Emil J. C. Hildenbrand, M.D.

"Varicose Veins." George K. Nutting, M.D.

Thursday, May 5, 2 P.M.

Scientific Session.

"Carcinoma of the Corpus Uteri: Treatment and Prognosis." William P. Healy, M.D., New York, N. Y.

"The Care of a Patient with Pneumonia." Harry F. Dowling, M.D.

"The Signs and Symptoms of Intracranial Trauma." Herbert H. Schoenfeld, M.D.

Motion Picture: "Dividing Cancer Cells in Vitro." From the Carnegie Institute of Washington, Department of Embryology, Baltimore, Md.

"Physical Evidence of Hormonal Disturbances in a Group of Female Patients." Anna R. Coyne, M.D.

"Collapse Therapy in Pulmonary Tuberculosis." William D. Tewksbury, M.D., and E. Raymond Fenton, M.D.

"The Modern Treatment of Syphilis." R. A. Vonderlehr, M.D., Assistant Surgeon General, United States Public Health Service.

"The Significance of Blood Cholesterol Determinations." James Alexander Lyon, M.D.

"The Mode of Action and Toxicity of Sulfanilamide." Perrin H. Long, M.D., Baltimore, Md.

Thursday, May 5, 7:00 P.M.

Banquet, Mayflower Hotel.

Scientific Exhibits

May 4 and 5

David E. Buckingham, V.M.D.—Diseases of Animals Communicable to Man. Parasites of Man and Animals of Similar Kind.

Russell J. Fields, M.D.—Motion Picture: Syphilis.

Fred A. J. Geier, M.D.—Gastroscopy.

Edmund Horgan, M.D.—Bile Ducts; Varicose Veins.

Isadore Levin, M.D.—Physiotherapy in Cardiovascular Diseases.

Sterling V. Mead, D.D.S., Howard J. Newton, D.D.S., and Daniel F. Lynch, D.D.S.—Oral Surgery.

Mario Mollari, M.D.—Bacteriology. American Type Culture Collection.

J. W. Peabody, M.D.—Tuberculosis.

R. Rhett Rathbone, M.D.—Treatment of Sinus Infections by X-ray.

R. Lyman Sexton, M.D.—Diagnostic and Therapeutic Methods Used in Gastroenterology.

Social Hygiene Society—Venereal Diseases.

G. Louis Weller, Jr., M.D.—Changes in Rhythm Following Carotid Stimulation.

Wednesday, May 11: Stated meeting of the Society. Election of officers; election of members; reports of committees, etc.

THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA SECURES MR. THEODORE WIPRUD AS EXECUTIVE SECRETARY

Mr. Theodore Wiprud, Secretary of the Medical Society of Milwaukee County (Wisc.), is expected to assume the duties of Executive Secretary of the Medical Society of the District of Columbia within the coming month. A special committee of the Medical Society of the District of Columbia, of which Dr. J. Russell Verbrycke, Jr., was Chairman, has recently announced the successful completion of negotiations. The final correspondence between Dr. John S. Gordon, President of the Medical Society of Milwaukee County, and Dr. J. Russell Verbrycke, Jr., bespeaks the fine spirit on the part of the Milwaukee Society with which a satisfactory termination is brought to the efforts of our local committee. Unmistakably is depicted the esteem in which Mr. Wiprud is held in Wisconsin. No encomiums could speak more clearly for Mr. Wiprud than the following:

Milwaukee,
April 9, 1938.

Dr. J. Russell Verbrycke, Jr.,
The Farragut Medical Building,
Washington, D. C.

Dear Dr. Verbrycke:

The Board of Directors of the local County Medical Society met on last Thursday evening to consider the employment of a successor to Mr. Theodore Wiprud, Executive Secretary of our Society, who submitted his resignation last week.

We will seriously miss Mr. Wiprud's services and would like to have kept him here. In fact several attempts were made to have him see it that way. Now that he has finally decided to accept your proposal we realize that your organization would like to have him assume his new duties as soon as possible. The Board wishes me to advise you that just as soon as a successor can be found and given some training, Mr. Wiprud will be released. We expect that this will be very soon.

Applicants will be interviewed by the Board on next Thursday evening. Following that session Mr. Wiprud may be able to relay more definite information to you.

My primary purpose in writing you is to let you know that we will move as rapidly as we can in an effort to obtain a new secretary.

We feel that you are extremely fortunate in obtaining Mr. Wiprud. He has been unusually successful in his work here.

Sincerely yours,
(Signed) John S. Gordon, M.D.,
President, The Medical Society of Milwaukee County

Washington, D. C.
April 13, 1938.

Dr. John S. Gordon,
Bankers Building,
Milwaukee, Wisconsin.

Dear Dr. Gordon:

I am sure that I can speak for our entire Society when I say that we so greatly appreciate your very kind letter and the cooperation of the Milwaukee Society.

I hope that your Society will not take amiss our negotiations with Mr. Wiprud. Our need for such a man is so pressing and is now national in its implications instead of merely local, that we felt that we could not train one for the place but would have to secure the best man that we could find.

With kind regards, I am,

Sincerely yours,
(Signed) J. Russell Verbrycke, Jr., M.D.

NEWS AND PERSONALS

The Summer Round-up of Children, 1938, a health activity of the District of Columbia Congress of Parents and Teachers, is endorsed by the Medical Society of the District of Columbia. Dr. John H. McLeod is the official representative of the Society in this movement. Members of the Society are urged to cooperate in this health activity when children are brought to them for examination and treatment.

May Day-Child Health Day, 1938, Sunday May 1. Supplementary observance will be held April 30 and May 2. The slogan "Speed Children on the Road to Health" well proclaims the objective. By Congressional resolution of May 18, 1928, May Day is thus observed, the Children's Bureau, United States Department of Labor, under Miss Katharine F. Lenroot, acting as sponsor.

Pan American Medical Association, Washington, D. C. Chapter, held a meeting on Sunday, March 20, at the home of Dr. James Alexander Lyon, "Glenview Farm," Rockville, Md. About 120 physicians attended. Dr. F. Castillo Nájera presided.

The Program

1. "The Cruise of the Pan American Medical Association in 1938 and Plans for the Buenos Aires Congress." J. J. Eller, M.D., Director General of the Association.
2. "The Technic of Intranasal Sinus Operations." (Colored motion pictures.) Lee Hurd, M.D., of New York City.
3. "The Aging of Some Homeostatic Mechanisms." (Lantern slides.) Walter B. Cannon, M.D., of Harvard University.

Another meeting of the Chapter was held on Sunday, April 10, at the Legation of Panama through the courtesy of the President-elect of the Chapter, Dr. Augusto S. Boyd. About 60 physicians attended. Because of the absence in Mexico of Dr. F. Castillo Nájera, President of the Chapter, Dr. James Alexander Lyon, the Vice President, presided over the meeting.

The Program

1. "Hypertension: General Considerations and Surgical Treatment." Edgar V. Allen, M.D., of the Mayo Clinic.
2. "Some New Developments in Urological Surgery Including Operations upon the Kidneys and Genitalia." (Motion pictures and lantern slides.) Oswald S. Lowsley, of New York City.
3. "Some Prostatic Problems of Interest and a Discussion of Prostates in Females." (Motion pictures.) Hugh H. Young, M.D., of Baltimore.

Two of the local members were honored at the recent (January) meeting in Havana: Dr. James Alexander Lyon being made a Trustee, and Dr. Custis Lee Hall a Vice President, of the international organization.

Washington Medical and Surgical Society will hold its Forty-first Annual Banquet at the Mayflower Hotel on May 19, 1938, at 7:30 P.M.

The speaker: The Honorable J. Hamilton Lewis, United States Senator.

Subject: "The Federal Attitude Toward The Medical Economic Problem."

Inclusive with the invited guests are noted:

Senator Arthur Capper; Congressman Ross Collins; Drs. Dean Lewis, of Johns Hopkins University, Baltimore; J. C. Flippin, University of Virginia, Charlottesville, Virginia; Earl B. McKinley, Dean of George Washington University School of Medicine; Thomas E. Neill, President of the Medical Society of the District of Columbia; William Gerry Morgan, Former President of the American Medical Association.

Dr. Joseph Horgan is President; Dr. Beveridge Miller, Secretary. Dr. Frank E. Gibson, whose special ability for developing fine banquets with entertaining programs for the Washington Medical and Surgical Society has long been recognized, is again in charge of the general arrangements.

Washington Ophthalmological Society held its final meeting for the year 1937–1938 on April 18, in the Medical Society Building.

The program:

1. "Optico-chiasmatic Arachnoiditis." Derrick T. Vail, M.D., of Cincinnati.
2. "Tension in Intraocular Neoplasms." John H. Dunnington, M.D., of New York City.
3. "The Practical Application of Contact Glasses. Demonstration and End Results of Fifteen Years." Harry S. Gradle, M.D, of Chicago.

The American College of Physicians held its Twenty-second Annual Session in New York City, April 4–8, 1938. Drs. V. J. Dardinski, Daniel L. Finucane, John Minor, Walter K. Myers, and Isaac J. Silverman were elected Fellows of the College.

Members of the Medical Society of the District of Columbia who registered, included:

William P. Argy
Walter A. Bloedorn
Grafton Tyler Brown
Roger M. Choisser
Coursen B. Conklin
Samuel Dessoff
Lewis C. Ecker
Walter Freeman
Henry B. Gwynn
Frank S. Horvath
Oscar B. Hunter
Thomas S. Lee
James Alexander Lyon
Michael J. McInerney
William Cabell Moore
Howard T. Morse
Matthew White Perry
E. Clarence Rice, Jr.
Mark P. Schultz
Isaac J. Silverman
David O. Smith
Frank L. Williman
Wallace M. Yater

Dr. William Gerry Morgan, who has served as Secretary General, is succeeded by Dr. George Morris Piersol. Dr. Morgan is now Third Vice President.

The American Society for Pharmacology and Experimental Therapeutics, at its meeting of April 2, 1938, at Baltimore, Md., adopted the following resolutions pertaining to unregulated dangerous therapeutic preparations:

> The American Society for Pharmacology and Experimental Therapeutics views with alarm the lack of statutory regulation of the sale and use of dangerous therapeutic preparations, which result in such tragedies as the recent series of deaths from "Elixir of Sulphanilamide" and from contaminated serum. Furthermore, the present and increasing promiscuous use by the public and especially by the youth of this country, of drugs which have either a pronounced stimulating effect or a profound depressing effect upon the nervous system is an alarming situation calling for immediate remedial measures in the interest of public health and safety.
>
> Therefore, the American Society for Pharmacology and Experimental Therapeutics, in annual meeting assembled, respectfully but firmly urges that the governmental authorities, through Congress, be given the necessary power to regulate the use by or sale to the general public of such preparations as are dangerous or inimical to the public health and safety.
>
> Be it further resolved, that new or untried drugs should not be allowed to come into use by the general public before authoritative sanction has been obtained.
>
> Be it further resolved, that copies of this Resolution be sent to all appropriate governmental and medical organizations.
>
> McKeen Cattell
> E. M. K. Geiling
> O. S. Gibbs
> George B. Roth
> C. W. Muehlberger, Chairman

American Neisserian Society meets in Washington, D. C., May 16–17, 1938, in the Public Health Auditorium. Papers will include "Mode of Action and Clinical Use of Sulfanilamide," by Dr. Perrin H. Long, of Baltimore, an authority on chemistry. Clinical sections, laboratory and research sections will complete an interesting and varied program.

American Therapeutic Society, at its recent meeting in New York City, honors Washington physicians with high office:

Dr. Oscar B. Hunter was elected President.

Drs. Joseph F. Elward and Lewis H. Taylor were respectively elected to the responsible offices of Secretary and Chairman of the Council.

Other officers were elected as follows: Drs. Dan Sexton of St. Louis, First Vice President; Wilbur Duryee of New York City, Second Vice President; Lee Rice of San Antonio, Texas, Third Vice President; and Louis F. Bishop of New York City, Editor.

Dr. Francis R. Hagner was reëlected, at a recent meeting of the Executive Committee, as a member of the Medical Defense Committee for a period of 3 years, succeeding himself. The Medical Defense Committee as now constituted consists of—

Luther H. Reichelderfer, *Chairman*
John B. Nichols
Francis R. Hagner
Coursen B. Conklin, *ex officio*

Within the past month a member, sued for alleged malpractice, avoided trial. The plain exposition of the viewpoint of the defendant to the counsel of the plaintiff brought satisfactory results. Often prophylactic measures by a counsel employed for the defense of a member brings successful results. Prevention of unjust litigation is the objective of the committee. An informed attorney for one bringing or threatening suit obviates improper settlements and trials.

Dr. Arthur C. Christie delivered the J. Chalmers Da Costa oration on "Comprehensive Planning for Medical Care—The Physicians Responsibility," before the Third Annual Postgraduate Institute of the Philadelphia County Medical Society, March 28–April 1.

Drs. Norman P. Scala and E. A. Spiegel (Philadelphia) read a paper entitled "Ocular Disturbances Associated with Experimental Lesions of the Mesencephalic Central Gray Matter," before the Philadelphia Neurological Society on November 19, 1937.

The Health Department of the District of Columbia announces relative to typhoid fever patients a new requirement to the effect that "two successive specimens of stool and urine be submitted to the Health Department Laboratory at intervals of not less than 3 days prior to the official discharge of the patient."

Memorial to the late Mrs. Charles W. Richardson was unveiled in the Society's Library on Monday, April 11, 1938. A marble tablet of suitable design to harmonize with the marble fireplace and library furnishings was selected by a committee as a lasting tribute from the Society's membership. The inscription reads:

> Erected by the
> Medical Society
> of the
> District of Columbia
> In Memory of
> AMY SMALL RICHARDSON
> Who as Chairman of the
> Women's Committee led the efforts
> to furnish and decorate
> this building

During the early days of building activity, Mrs. Richardson gave unstintingly of her time and energy in bringing to fruition the hopes of the profession down through the years for a building with suitable furnishings and facilities for its meetings and activities.

The formal program on Monday, at 3 P.M., included:

INVOCATION. The Reverend Doctor Albert Evans.
REMARKS. Edward Y. Davidson, M.D., Chairman of the Committee.
UNVEILING. Mrs. Cline N. Chipman, former member of the Women's Committee of the Building Committee.
ADDRESS. Mrs. Thomas E. Neill, President, Woman's Auxiliary to the Medical Society of the District of Columbia.
ADDRESS. The Reverend Doctor Albert Evans, New York Avenue Presbyterian Church.
ADDRESS. Henry C. Macatee, M.D., Past President, Medical Society of the District of Columbia.
BENEDICTION. The Reverend Doctor Albert Evans.

The committee in charge of the program and the selection of the memorial included: Drs. Edward Y. Davidson, Chairman; Cline N. Chipman, and Virgil B. Jackson.

Frank Benjamin Cogswell, M.D.

1884-1938

Dr. Frank Benjamin Cogswell, for many years a practicing physician in this city, was born in Lake City, Minnesota, October 20, 1884. After the completion of his term of service on the House Staff of the National Homeopathic Hospital he succeeded in building a large local clientele. Dr. Cogswell became a member of the Medical Society of the District of Columbia, November 12, 1930. He was a Fellow of the American Medical Association, and a member of the Y. M. C. A., the Chiron Club and the Masonic fraternity. He died on March 28, 1938. His funeral took place on March 31, the following members of the Society serving as honorary pallbearers: Drs. Walter Freeman, H. D. Shapiro, J. H. Branson, Carden F. Warner, Ernest F. Sappington, Oliver C. Cox, Merton E. Twogood, Wyrth Post Baker, Franklin B. Pedrick, Gregg Custis Birdsall, E. E. Quayle and John A. Swartwout.

Dr. Cogswell is survived by his widow, Mrs. Alice T. Cogswell; a son, Charles L. Cogswell; and a daughter, Miss Phyllis Cogswell.

Thomas Benton Crisp, Jr., M.D.

1893-1938

Dr. Thomas Benton Crisp, Jr., a native of Washington, a graduate of its public schools, who received degrees of Phar. D. and M.D. from George Washington University, died suddenly on March 20, 1938. Through his ability and genial personality he was generally admired by both his fellow practitioners and patients. Undoubtedly his close application to duties attendant upon a large practice brought his early demise. His membership in the Medical Society of the District of Columbia began on January 22, 1924. In 1928 he rendered valuable service as a member of the Legal Advisory Committee. He was a member of the Myron M. Parker Lodge of Masons, and Almas Temple of the Shrine. Membership was also held in the Columbia Country Club. Dr. Crisp is survived by his widow, Mrs. Marguerite V. Crisp; his mother, Mrs. Elizabeth Crisp; three sons, Thomas B., Jr., Donald, and Robert Crisp; two daughters, Joyce and Gail Crisp; a brother, Dr. Edwin S. Crisp; and two sister, Mrs. Edmund Mallet and Mrs. Dorothy Hanson, all of this city. He was buried in Cedar Hill Cemetery on March 23, 1938.

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THE MENTAL HOSPITAL OF YESTERDAY AND TODAY*

WINFRED OVERHOLSER, M.D.
Superintendent, Saint Elizabeths Hospital

The magnitude of the problem of mental disease, and even of that phase of the problem which deals with the institutional care of the mentally ill, is so great that I venture to come before you this evening to present some thoughts on the contrast presented between the mental hospital of yesterday and that of today. The fact that, for example, more than half of all the hospital beds of the entire country are devoted to the care of the mentally ill (432,290 actually in hospital, December 31, 1936), and that more than 109,000 new cases are admitted annually to mental hospitals, merely serves to suggest the medical, the social, and the economic importance of mental disease. If perchance any further justification should be needed for a consideration of this topic, I suggest the growing interest of the various other specialties of medicine in psychiatry and the increasing recognition of the fact that psychiatry as one of the newer specialties of medicine has close bonds with the work of practitioners in the field of internal medicine, surgery, obstetrics, and the other specialties. This growing interest and recognition of common aims and of the consideration of the patient as a human being, is one of the most encouraging and stimulating developments in psychiatry, and it is extremely gratifying to find this interest, brilliantly stimulated by the late Dr. William A. White, so widespread in the District of Columbia.

The descriptions of unusual mental phenomena and speculation concerning their nature are found in medical and lay literature throughout the ages. The Egyptian papyri and the Old Testament furnish examples, which, at least so far as the latter source is concerned, undoubtedly readily come to your mind. Historically, the establishment of institutions for the care of the mentally ill is a recent development, although, of course, even in the time of Hippocrates the sufferers who visited the various spas, as perhaps they would be called nowadays, must have included persons who would at present be labeled psychotic. There was among the early medical writers considerable discussion of mental diseases. Hippocrates at least recognized the brain as an organ of feeling and reasoning, as he described it, and recognized that it had at least some connection with mental symptoms. He recommended purging and blood-letting, as well as the liberal use of hellebore, procedures which seem to have had much vogue until recent times. Some of the writers who flourished immediately after the time of the birth of Christ and during the early centuries following, such as Aretaeus, Celsus, Asclepiades, and Alexander of Tralles, made attempts at classifications, and Alexander even spoke of a "determination of blood to the head" as being the causative factor in mental disorder—a thought echoed by Benjamin Rush only a little over a century ago. There was among these early medical writers a clear recognition of mental disorder as a natural phenomenon, and a willingness to consider and speculate upon methods of treatment not unrelated to those applied to other types of illness. During the middle ages, however, this natural outlook was replaced to a very large extent by a theological and demonological philosophy. Various types of magic and exorcism took the place of such treatments as blood-letting, and the influence of astrological concepts comes down even to our own time in the use of the word "lunatic," a word which, it may be added, is still embalmed in the legislation relating to the commitment of the mentally ill in the District of Columbia. Much store was laid upon the efficacy of various nauseous compounds, and scourging and other forms of physical violence were frequently resorted to, largely for the purpose of driving out the demons. Belief in demoniac possession as applied to the mentally ill had a lamentable corollary, namely, the belief in witchcraft, a belief which contributes an extremely sorry chapter to the history of man's inhumanity to man. Weyer and Paracelsus had the courage to ridicule and to attack this belief (in witchcraft), but it was not until 1736 that the laws relating to witchcraft were repealed in England. The persistency of these notions seems strange to us, at this distance, and yet it is hardly stranger than the persistence of some other beliefs concerning the mentally ill which are still cherished dearly by the general public, or at least a large portion of it.

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* Read at the joint meeting of the Section on Neurology and Psychiatry and the Society, February 9, 1938.

As far as one can ascertain, during the middle ages the mentally ill, if troublesome to the community, were confined in monasteries or driven out into the wilds, where many undoubtedly perished. If not especially troublesome, they were allowed to wander at large. The first attempt at institutional care for the mentally ill can be dated with certainty from no earlier than the beginning of the fifteenth century. Certainly an institution was opened in Valencia, Spain, in 1408, and there are some indications that the famous Bethlehem Hospital was founded at about this time, although a volume entitled, "Sketches in Bedlam," published in 1823, makes the statement that that institution was not incorporated until the time of Henry VIII, in 1553. An interesting sidelight in philology is given by consideration of the name of this institution, for it furnished an eloquent word to the English language, namely, "bedlam," a corruption of the word "Bethlehem," and synonymous with all that is undesirable in the care of the mentally ill. Albert Deutsch in his excellent new book entitled, "The Mentally Ill in America," refers to a report in 1403, to the effect that the porter absconded from Bedlam with two pairs of stocks, four pairs of iron manacles, and six chains of iron with six locks. Another interesting sidelight on the type of care given to the inmates is the fact that as recently as about the time of the American Revolution, Bedlam Hospital is said to have made sometimes as much as 400 pounds in a single year from the fees paid by visitors to "see the sights." A visit to Bedlam even as late as 150 years ago was looked upon by the general public (and the public was encouraged in that view), much as a trip to the monkey house in Rock Creek Park might be looked upon today. The heartlessness of the treatment meted out to the poor wretches who were confined in these institutions makes one's blood "run cold." The institutions like Bedlam were poorly heated; little, if any, attempt was made at cleanliness; in many instances patients of both sexes were thrown together—in short, the picture was not a pleasant one. Even this miserable type of care, if care it can be called, was accorded only to those who were termed the furiously mad. The so-called mild cases, the inoffensive patients, were allowed to go about at large, begging their way, like the famous Tom o' Bedlam. Sometimes, indeed, they were actually led about the countryside on a chain just as the late lamented organ grinders used to carry about a monkey. In America the situation was no better and there were no institutions of any sort for the mentally ill until the opening of the Pennsylvania Hospital in 1752. Up to that time the "furiously mad" were cast into jail, where not infrequently they met death or frostbite from neglect, and in a few cases they were cared for in hovels, or even what might be termed kennels, without heat; indeed, in some of the New England towns the thrifty burghers followed the practice of "warning out" the luckless wight into the next town, where he might or might not receive more humane treatment.

I have already spoken of the opening of the Pennsylvania Hospital as the first institution to care for the mentally ill in America. In view of the fact that such trained physicians as there were had been educated in England, it was to be expected that the practice was the same as in England in this as in other fields of medicine. Deutsch quotes from one bill, dated in 1752, from a blacksmith, for making for the Pennsylvania Hospital an assorted amount of iron ware, including a pair of handcuffs, two leg locks, two large rings and staples, as well as two swivels for leg chains. The practice of charging admission to the curious onlookers was continued as late as 1822 at this institution. It is, of course, unnecessary to add that the Pennsylvania Hospital has been in the vanguard of progress in the care of the mentally ill in this country and that today it is ranked as among the leaders of the private mental hospitals. Through the failure of the City of Boston to seize an opportunity deriving from the generosity of the father of John Hancock, whereby an institution could have been established as early as 1766, the Commonwealth of Virginia became the first state to have a public mental hospital, the institution now known as the Eastern State Hospital at Williamsburg, founded in 1773.

Meanwhile, on the Continent several enlightened physicians were taking steps for better care of the mentally ill. Chiarugi, in Italy, as early as 1774 abolished restraint to a large extent, and in 1792 Pinel,* in France, and Tuke, in England, did likewise in spite of considerable public opposition. Their example did not spread to this country at all rapidly, however, for as late as 1844 we find the Association of Medical Superintendents of American Institutions for the Insane (now known as the American Psychiatric Association) adopting resolutions in opposition to the abolition of mechanical restraint for patients in mental hospitals. The father of American psychiatry was Benjamin Rush, one of the signers of the Declaration of Independence and probably the leading medical man of his time. In 1812 he published the first American text on what is now known as psychiatry, entitled "Medical Inquiries and Observations Upon the Diseases of the Mind." Rush maintained that "madness is seated in the blood vessels of the brain" and laid much stress upon the quality and rate of the pulse, as was the general practice of physicians in his time. He states that seven eighths of all the deranged patients in the Pennsylvania Hospital in the year 1811 had "frequent pulses," and goes on to say that "that symptom constitutes an unequivocal mark of intellectual derangement." Following his hypothesis he advocated such measures as blood-letting, purging, administration of emetics, a reduced diet, salivation and blisters. As for the liquid constituents of the diet, he says they "should consist of old Madeira or sherry wine, and porter diluted with water, or taken alone, provided the stomach be not affected with a morbid acid." He adds, "I have once known this disease cured by the liberal use of Madeira wine." He also employed baths, exercise, occupation, and music, the "tunes" to be "of the most invigorating nature." For single hypochondriacs matrimony was advised! Dr. Rush was rather proud of an invention which he called a tranquilizer—a chair in which the patient was strapped hand and foot with a box-like arrangement over his head. Apparently patients did not always recover or even respond favorably to all of this procedure. "If all these modes of punishment should fail of their intended effect," said Dr. Rush, "it would be proper to resort to the fear of death. . . . By the proper application of these mild and terrifying modes of punishment chains will seldom, and the whip never, be required to govern mad people." The use of such words as "punishment" and "chain" indicate clearly the state of mind which prevailed even in the case of a most enlightened physician of that time regarding the attitude toward the mentally deranged. At least, however, it can be said that the demonological age had passed and that once again mental disorder was being looked upon as a natural phenomenon and as a proper topic for the attention of physicians.

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* In his "Treatise on Insanity" (translated by D. D. Davis and published in London in 1806), Pinel, in describing his methods at the Bicêtre, makes the following remarks, advanced indeed for their time: "Cruel treatment of every description, and in all departments of the institution, was unequivocally proscribed. No man was allowed to strike a maniac even in his own defence. No concessions however humble, nor complaints nor threats were allowed to interfere with the observance of this law. The guilty was instantly dismissed from the service." (p. 90)

Although Virginia had established a public hospital for the care of the mentally ill before the Revolutionary War, the other American states were decidedly slow to follow suit. South Carolina established a hospital in 1828, Massachusetts in 1833, and New York in 1843. Most of the mentally ill, however, were still cared for in almshouses or jails. One especially pernicious practice, that of auctioning off the community's dependents to the highest bidder for care, prevailed during the 20's and 30's of the nineteenth century. The conditions which existed were a moving cause for one of the most astonishing campaigns ever undertaken singlehanded, namely, that carried on by Dorothea Lynde Dix during the years from 1841 to 1881. Although nearly 40 years of age when she started her work, and although frail in body, this remarkable woman, fired with a burning purpose to improve the lot of the unfortunate, was responsible directly for the founding or the enlargement of no less than 32 public mental hospitals in this country and the British Isles. Her record should be of particular interest to Washingtonians, for this city was the scene of many of her labors. She herself wrote the bill which created what is now known as Saint Elizabeths Hospital, opened in 1855, and the hospital is proud to have in its possession a considerable collection of memorabilia, among other things the beautiful mahogany desk upon which she wrote the Government Hospital bill. Miss Dix served in addition as superintendent of women nurses during the Civil War, and she secured the passage by Congress of a bill which would have set aside 10,000,000 acres of the public lands, the proceeds to be used for the care of the mentally ill of the United States. This bill never became a law, since it was vetoed by President Pierce, but it serves strikingly to illustrate the magnanimity, the humanitarian purposes and the perseverance of a great woman of whom all Americans may well be proud.

Although restraint persisted through the better part of the nineteenth century, the care given to the inmates of the mental hospitals which were now increasing both in numbers and population, thanks to the impetus of Dorothea Dix, was humane and, judged by the standards of the time, intelligent, although nowadays we should look upon it as frankly custodial. With the passage of the State Care Law in New York in 1890, recognition was given to the fact that the problem of the mentally ill was so large that it could not be adequately handled by any unit smaller than that of a state. State regulatory bodies have been developed in fully half the states of the union since that time, and the tendency is distinctly away from city and county care of the mentally ill. Even state care, however, has shown itself in the past not to be a guarantee against the ascendancy of political over professional qualifications, and one of the great factors in the tardy development of a considerable number of states has been the tendency to look upon state hospitals as furnishing jobs for loyal party workers rather than as institutions to which should be attracted able and conscientious physicians who desire to make the care of patients their life work.

The turn of the century found in progress a great ferment in the field of psychiatry. Fantastic as now seem the phrenological teachings of Gall and Spurzheim, the fact remains that they stimulated interest in the localization of functions of the brain, and they must be given their share of credit for the great work of the German school of neurology. This group of neurologists, which did such yeoman service in the closing years of the nineteenth century, were inclined to attribute mental disorder to a definite disease process of the brain. Interest in the organic aspect of mental disorder, particularly with reference to the central nervous system, gave rise to the emphasis upon research which has during the past third of a century been one of the very encouraging activities of a number of mental hospitals in this country. The New York State Psychiatric Institute, founded in 1895, attracted to it in 1902 Professor Adolf Meyer, the dean of American psychiatry, who is still carrying on his extremely valuable and stimulating teaching and investigations at the Phipps Clinic of Johns Hopkins Hospital. The first state psychopathic hospital, that at Ann Arbor, Michigan, for many years presided over by Dr. Albert M. Barrett, was founded in 1907 and has been followed as an example in a number of other cities in this country. The psychopathic hospital has been an important development in American psychiatry, furnishing an opportunity for short intensive treatment under informal conditions of admission, thus often avoiding commitment, and in addition providing outpatient facilities and teaching and research opportunities. The year 1902 marks the inauguration at Albany, N. Y., of another development which only recently is acquiring considerable momentum, namely, the establishment of psychopathic wards in general hospitals. The value of such wards is great. In the first place, an opportunity is given for the proper care of those acute psychotic episodes occurring in patients in general hospitals without the necessity of transferring the patient to a mental hospital, especially since sometimes such transfer would cause considerable risk to his life. A feature perhaps even more important is that the establishment of such a ward breaks down the distinction, largely an artificial one, of course, between the general hospital and the mental hospital. It promotes a feeling of unity between the practitioner of psychiatry and the practitioner of the other specialties, and emphasizes the unity of their aims and purposes.

The opening of the twentieth century brought upon the scene two psychiatric geniuses, the influence of both of whom is still strongly felt, namely, Emil Kraepelin and Sigmund Freud. Kraepelin was a close student of symptomatology. He described his cases carefully, followed their development closely, and contributed a classification which is still to a very large extent in use. Although too close an adherence to a system of classification has sometimes a hampering effect, Kraepelin unquestionably stimulated a more detailed study of the patients coming to the hospital and a closer attention to the progress of their cases, and provided at least a rough guide as to the prognosis. He likewise gave a considerably clearer rationale of treatment than had existed prior to his time. Even though his work was largely descriptive, Kraepelin's influence upon the institutional care of the mentally ill will unquestionably be strong for many years to come.

The significant contribution of Freud met in this country very considerable opposition at the start, largely due to misunderstanding, partly on account of the new vocabulary which he devised, and partly on account of emotional resistances which are clearly understood by the psychoanalyst but vehemently denied by the objectors. Freud's theories found an ardent supporter in Dr. William A. White, and he presented them fearlessly and with that eloquence and lucidity which made him to my mind the outstanding contributor to the American literature of psychiatry. Psychoanalysis is a highly individualized procedure and perhaps can never be incorporated on any large scale into the work of a large mental hospital. Nevertheless, Freud has contributed as no one before has ever done to our understanding of what the mentally deranged patient is trying to express, his reasons for his conduct and his language. It is gratifying to note that in spite of the early opposition, the principles enunciated by Freud are now receiving widespread acceptance, in a general way if not as to all particulars.

The various steps by which all of the changes in the care of the mentally ill have come about can not, of course, be traced within the confines of anything but a lengthy volume. It is indicative of a widespread interest in the topic of the development and the present status of the care of the mentally ill, that two volumes have recently appeared both of which are receiving considerable attention from the reading public, namely, the volume by Deutsch, which I have already mentioned, and that by Dr. Walter Bromberg, entitled "The Mind of Man." The development of training schools for nurses in mental hospitals and of schools for psychiatric social workers, medical education relative to psychiatry, and postgraduate instruction in that subject, the various accomplishments in the field of research, and the evolution of specialized forms of treatment, all have their interest, but unfortunately time does not permit any extended consideration.

First of all, it may be said that the trend has constantly, and particularly during the last 50 years, been toward the curative rather than the custodial in institutional psychiatry. It is no mere accident that the great public mental hospitals are no longer known as asylums except in the minds of the headline writers in the daily press. The modern mental hospital is as well equipped as a general hospital. It is provided with operating rooms, with X-ray departments, with the services of internists and consultants in the various specialties, and with the services of dental surgeons. It is equipped, in short, to meet the demands of any physical condition which may arise and call for treatment. It is being recognized more and more that the distinction between mind and body is largely academic, that the patient represents not a diseased liver or heart, or just a case of dementia praecox, but that he is a human being, a social animal, with certain assets and certain liabilities, who is attempting in his own peculiar way and conditioned by his own disabilities to adjust himself to the demands of his environment. The concept of a clear-cut and almost independent entity known as the "mind" is one that at present survives almost solely in the legal concepts. In a large mental hospital the medical and surgical services of the institution are in charge of men trained primarily as internists and surgeons, although they too should have a psychiatric interest and attitude toward the patient. The physicians on the so-called "psychiatric wards" of the hospital should, at least if they are recent graduates, have had a considerable training in psychiatry during the course of their medical education. They should have had a general internship and be well grounded in general medicine, since the patient can no more be looked upon as a disembodied mind than he can be looked upon as a decerebrated vehicle for a gastrointestinal tract. All in all, psychiatry is coming to have an appeal to many of the ablest graduates of our medical schools, and the day is long since past when the staffs of mental hospitals were made up of broken-down and unsuccessful general practitioners. Postgraduate training in psychiatry is highly desirable and indeed essential for institutional work, and there is no better place for such training than in the large mental hospitals. The newcomer should be guided and not allowed merely to drift and trust to his own devices. Needless to say, the desirable candidates are attracted only where the rewards are commensurate with their training and where a professional atmosphere obtains, where promotion is based upon merit, and where security of tenure during efficiency and good behavior may be assured. If a merit system is demanded anywhere in governmental machinery (and there seems to be little room for argument on this point) it is imperative in the administration of public mental hospitals.

The mode of admission to the modern mental hospital should be made as easy and informal as possible. It would be desirable indeed if no further formality were needed than is required in a general hospital, but in view of the fact that a great number of mental patients lack insight and have to be detained against their will, some form of certification is probably legally necessary for this group. The experience of many states, however, has shown that such certification can be made so simple that there is but little resistance in the minds of the patients' relatives to the idea of going through this process. Certainly any system which requires the personal appearance of the patient in court, whether before a jury or before a judge alone, can not be too severely condemned. The pathologic fear of "railroading" which is expressed in certain circles, even if this imaginary evil existed, could hardly by any stretch of the imagination warrant the laceration of the feelings of the relatives and the incalculable mental damage to the patient which is done by this requirement of an open trial in court. For the one extremely unlikely case of so-called "railroading," there are literally thousands of mental patients to whom great mental damage is done by the procedure, and there are many more who are in need of hospital treatment whose families decline to subject them or themselves to what they look upon as the disgrace of a court appearance, thus depriving the patients of needed hospital care. Some form of temporary care not calling for certification should be provided for, and those patients who themselves recognize the desirability of hospital treatment should be permitted to enter voluntarily.

As to the patient's care after he arrives at the hospital, a separate admission service is essential. This service should be heavily staffed with physicians and with nurses to furnish an opportunity for intensive treatment. In many instances it eliminates entirely the necessity of the patient coming in contact with the more continued types of mental disorder who are found in the so-called "chronic" wards. Throughout the hospital mechanical and chemical restraint and seclusion should be reduced to the absolute minimum, their places being taken by occupational therapy, hydrotherapy, industrial and recreational pursuits and psychotherapeutic interviews with the physician. Attention to the personal appearance of the patient has an important therapeutic effect; the barber shops and the so-called "beauty parlors" which have been established in many hospitals are an extremely important form of therapy, stimulating self-respect. A well organized pathologic laboratory, psychologic department and social-service department are indispensable adjuncts of a well organized hospital. The social service constitutes the liaison between the hospital and the community, and is extremely important in making contacts with the patient in the hospital, investigating the conditions to which he is to return upon leaving and in maintaining rapport with him while he is on visit status. By aiding in the release of patients the social-service department of any well organized mental hospital pays for itself many times over during the course of every year. Staff conferences should, of course, be held at which patients' cases are discussed freely and fully, and other conferences of the staff should likewise be held with a view to keeping current with the medical literature. For this purpose a medical library is essential, and the members of the staff should be expected to use it freely in keeping abreast of the new developments in this rapidly progressing specialty of medicine. An outpatient department, to which patients with mental problems may come without the need of inpatient care, offers a valuable service to the mental health of the community. More, however, is called for than the best and the latest in the care of the patient if a public mental hospital is to discharge its full obligation. I refer especially to research and teaching activities.

The importance of psychiatric research is being widely recognized both by the public appropriating authorities and by private foundations. In its last annual report the Rockefeller Foundation, for example, announced that it had contributed to research in the field of psychiatry and mental hygiene no less than $2,000,000.00 within a single year. The need for research is pressing not only scientifically but economically. Study concerning the nature of mental disorder, its treatment, and especially its prevention, if continually and efficiently followed, may be expected to yield substantial dividends during the coming years, not only in the mental health of the nation, but in the cost of the development and maintenance of mental hospitals. Progress is being made along various lines; I need mention, for example, only the brilliant success of the malarial treatment of general paresis and the great interest now being shown in the so-called pharmacologic shock treatment of dementia praecox.

As for teaching, the returns again more than offset any of the efforts involved. The continuing and growing need for graduate nurses especially trained in psychiatry calls for the continuance of nurses' training schools in mental hospitals. Such hospitals likewise furnish the training ground for occupational therapists, social workers, physiotherapists, psychologists, and students of law and theology. As for the medical student, the time has long since passed when a few cursory lectures on some of the more frank psychoses constituted the entire teaching in psychiatry. The hospital is a necessary adjunct in psychiatry just as in the other fields of medicine. Not only are clinical demonstrations necessary, but the practice is followed in some medical schools of having the medical students live for a time in a mental hospital, where they are treated as members of the staff, have the opportunity to observe patients at close range, to write histories, and to attend staff meetings. The proper psychiatric training of the future physician as well as that of the practitioners of various other professions, such as social workers, is bound in the long run to affect favorably the care rendered to the ill of the community. It is bound, likewise, to have a favorable effect upon breaking down some of the misunderstanding and misconceptions which now prevail in the community relative to the mental hospital. Not to be forgotten, however, is the desirable effect exercised upon the staff of a hospital engaged in teaching. The presence of medical students and of nurses in training has a distinctly beneficial effect upon the morale of the institution and upon the alertness of the staff. Teaching thus serves a two-fold purpose, either of which alone would be ample justification for its continuance.

Such, in brief, are some of the highlights in the evolution of the mental hospital of today. It is a far cry in attitude and knowledge and results from the asylum of 100 or even 50 years ago to the mental hospital of today. Judged by medical standards, it is entitled to take its place side by side with its colleagues, the general hospital, the tuberculosis sanatorium, and the other specialized types of hospital. Much, however, remains to be done. First of all, we must dispel the public feeling that some special sort of stigma attaches to residence in a mental hospital, and the notion that the mentally ill patient must be treated like a criminal before he may be sent to the hospital. Progress has been made, but there is room for more, in the breaking down of the idea that a clear dichotomy exists between "mind" and "body." There must instead be emphasized the fact that what we call sometimes the mind is merely an abstraction, a summing up of the total reactions of the individual to his environment, and that no clear line can be drawn between mental and physical reactions. Within the hospital much work remains to be done in ascertaining the basic facts regarding the nature of mental disorder, how more patients may be cured, and how this type of disorder, which has been aptly termed man's last specter, may be rendered less of a menace to those thousands who, according to present estimates, may be expected to become patients in mental hospitals.

Finally, all the scientific interest and acumen, all the activities of the hospital must be infused with the ever-present remembrance that the hospital exists for the patient, and that the most thoughtful and humane attentiveness to the needs and comfort of the patient is at all times demanded.

Medicine Includes Psychiatry.—Before advance in knowledge can be effectively applied to medicine, it is necessary to secure the acceptance not only of doctors but of society at large. . . .

It is a far cry from Bedlam to the recent college graduate who, in applying for a college position accounted for two years of his life as "1923–25, in sanitarium with nervous breakdown." But there is still a lag between the knowledge of physicians and the attitude of society. The popular concepts of today are the discoveries and theories of day before yesterday. Gradually we are coming to realize that only the sane can sin, and that lapses from usual standards of behavior may be due to disease. Self-control is a natural accompaniment of sound health; and the absence of one may mean the lack of the other. Mental disease is slowly being divested of the opprohrium that we allot to misconduct. It is interesting to speculate what our attitude to the common cold would be if one of the early signs, along with sneezing and chills, were a transitory attack of kleptomania. The ancients saw mental abnormality as a possession by demons; the quasi-modern layman sees it as a disgrace; but the modern man is coming to recognize it as disease. . . .

Extract from "The Rockefeller Foundation. A Review for 1937," by Raymond B. Fosdick, President of the Foundation, *p. 22.*

WHEAT GERM OIL (VITAMIN E) IN THE TREATMENT OF REPEATED SPONTANEOUS AND THREATENED ABORTION*

A PRELIMINARY REPORT

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Repeated spontaneous abortion, commonly referred to as habitual abortion, is a term used to apply to repeated or recurrent abortions in which there seems to be no recognizable cause. Abortion, as employed in this paper, denotes the spontaneous, premature cessation of pregnancy at any stage in its course, excluding the delivery of a viable fetus.

The older accepted causes of this condition, such as infections (of which lues is the most common), abnormal endometrium, sperm defects, defects in the ova, heredity, placentitis, congenital malformations, trauma, placental sclerosis and others, have given way to the two more modern theories: namely, endocrine imbalance and hypovitaminosis.

The first of these more recent theories presupposes that progestin prepares the endometrium for the fertilized ovum and that while the corpus luteum is in ascendancy the pregnancy continues. At the same time pituitrin and estrin are inhibited. If estrin becomes dominant, the uterus is sensitized to pituitrin and labor ensues.

REVIEW OF THE LITERATURE

This theory is substantiated by a great deal of laboratory as well as clinical work, some of which will be mentioned. As early as 1903, Fraenkel[1] proved that the removal of the corpus luteum of early pregnancy in rabbits resulted in the termination of the pregnancy. Furthermore, Weichert,[2] Corner and Allen[3] and others have demonstrated that progestin prepares the endometrium for the fertilized ovum, while Hisaw, Fevold and Meyer[4] have shown that it exerts an inhibitory influence on the muscular contractions of the uterus. It has been shown by many workers that it also inhibits pituitrin. Thus has evolved the theory of endocrine imbalance as a cause of recurrent abortions.

In 1922 Evans and Bishop[5] reported that rats which were maintained upon supposedly complete dietaries could not reproduce unless certain food substances were included in the rations. The females appeared normal with natural estrus cycles and would breed and conceive, but they failed to deliver their young and the products of conception were subsequently resorbed. When whole wheat cereal, fresh lettuce leaves or dried alfalfa was included in the diet of the pregnant animals, reproduction occurred in the normal manner. Consequently Evans and Bishop designated the unknown substance necessary for reproduction as the accessory food factor X.

Sure,[8] working along similar lines at about the same time, arrived at the same conclusions as did Evans and his co-workers. The former proposed that the newly discovered antisterility factor be named Vitamin E, a designation which has been universally adopted.

In 1931 and 1933 Vogt-Moller[9] reported favorable results due to the administration of wheat germ oil (Vitamin E) in 18 out of 21 cases of habitual abortion. He suggested that this vitamin is needed because a hypovitaminosis exists during pregnancy caused by the increase in maternal metabolism and the added vitamin requirements of the fetus. He further asserted that this may reflect back to thyroid imbalance, dental caries, anemia and other constitutional conditions which place an added burden upon the maternal reserves.

Mall,[10] as early as 1910, advanced the theory that spontaneous abortion developed when the environment of the trophoblast was unsuitable—when, in short, maternal resistance to such invasion was too great. Shute, working along this line, has demonstrated that many spontaneously aborting women have developed a certain resistance in their blood to the activity of proteolytic ferments of the type found in the embryonic trophoblast. In 44 spontaneously aborting women, he found 73 per cent showing this characteristic type of resistance. Furthermore, Shute,[11] has shown that Vitamin E prevents this resistance to proteolysis, thus correcting the condition found in the blood serum of aborting women. His conclusions are that Vitamin E in the pregnant woman acts by neutralizing estrogenic substance, which, when present in excess, resists the intrusion of placental villi into the uterine wall. He endeavors to explain in this way the fundamental mechanism of abortion, miscarriage, premature labor, and still more recently the mechanism underlying the development of abruptio placentae.[12]

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* Read before the Washington Gynecological Society, November, 1937.

The first successful attempts to concentrate Vitamin E from wheat germ oil and to devise a method of biological assay were made by Evans and Burr in 1927.[6] They used as their source of the substance pressed wheat germ oil and assayed the product obtained by determining the amount necessary to provide for a pregnant rat of a known weight on a diet deficient in Vitamin E.

Olcott and Mattill[13] in 1934 reported that in addition to this striking function of Vitamin E, a single large dose allows fertility for two gestations, but not for three in rats under the same dietary regimen. More recently Evans, Emerson and Emerson[7] have isolated from wheat germ oil an alcohol having the properties of Vitamin E which they have named Alpha Tocopherol. This name is rather significant, being derived from the Greek words, Tokos, meaning childbirth, phero, to bear, and ol indicating an alcohol. They have found that 3 mg. of this substance will always enable rats deficient in Vitamin E to bear young. Pacini and Linn[14] have defined the unit of Vitamin E, thus establishing a means of standardizing the potency of a given preparation just as accurately as the other Vitamins, such as A and D.

Following the successful report on the use of Vitamin E by Vogt-Moller in 1931, Juhasz-Schaffer[15] in 1933 reported the cases of 5 women who had had repeated abortions and to whom full-term, normal, living babies were born following the use of the oil. Since this time many writers have reported favorable results on the use of Vitamin E in the management of recurrent abortions. In 1935, M'Gonigle[16] reported on 7 women whose previous pregnancy had terminated in miscarriage and who when treated with wheat germ oil later delivered 7 full-term living babies.

In 1936, Watson and Tew[17] reported their results in a series of 80 women treated with wheat germ oil for various reproductive difficulties. In their series of 35 women who had had 2 or more spontaneous abortions, 25 went to term and gave birth to healthy children following the treatment. Among 11 who had had 1 previous abortion, 9 went to term and were delivered of healthy children. In 19 cases treated for symptoms of threatened abortion, 13 continued uninterruptedly, to terminate in natural deliveries. In their sterility group of 15 nonpregnant women, not one pregnancy ensued following the treatment. Their conclusions are that wheat germ oil (Vitamin E) appears to be of definite value and to have its greatest scope of usefulness in the prevention of repeated spontaneous abortions for which no cause is obvious, that the oil may be used with advantage in the treatment of threatened abortion if it is administered promptly and in relatively large quantities, and that it is of no value in the treatment of nonfertility.

PERSONAL EXPERIENCE

The present paper is a preliminary report of the results obtained in the treatment of 7 cases with wheat germ oil for two groups of persons with reproductive difficulties, namely, those who have had one or more spontaneous abortions previous to this treatment, and those presenting the symptoms of threatened abortion. Only those patients who have delivered or in whom the pregnancy has progressed sufficiently far to anticipate the outcome are reported at this time.

Group 1. Recurrent Abortion. Of a group of 4 women who had sustained one or more recurrent abortions prior to the Vitamin E therapy, 1 went to term and delivered a full-term, healthy child (Table 1). One had a partial separation of the placenta at 8 months and delivered an infant which weighed 4 pounds, 9 ounces, and which fortunately survived. Another 1 terminated spontaneously about the twentieth week, 8 weeks after the commencement with wheat germ oil therapy. The fourth patient, with the exception of two mild attacks of uterine cramps with backache, went to term and delivered a normal, female infant which weighed 7 pounds, 4 ounces.

TABLE 1

Group 1—Recurrent Abortions

CASE	AGE	NUMBER ABORTIONS	WHEAT GERM OIL THERAPY	RESULTS	REMARKS
J. S.	26	1	Begun before L.M.P. Discontinued after fourth month.	Terminated at 8 months. Living child 4 lbs., 9 oz.	Abruptio Placentae.
B. J.	25	1	Begun before L.M.P. Continued throughout.	Full term. Living child 6 lbs., 14 oz.	No abnormality.
D. L.	24	1	Begun after second month. Intermittently throughout.	Spontaneous abortion after fourth month.	Placental infarcts.
J. K.	32	2	Begun at second month. Continued throughout.	Full term. Living child 7 lbs , 4 oz.	Small Placenta.

Group 2. Threatened Abortion. Three patients were treated for threatened abortion and in every case after the symptoms had begun (Table 2). Of these, 1 went to term and delivered a normal child without further trouble. Another had several episodes with cramps and bleeding but finally delivered a living child two weeks before term after premature rupture of the membranes. The third patient, after several attacks of uterine pain with spotting, finally went to term and delivered a normal, female infant which weighed 6 pounds, 6 ounces.

TABLE 2

Group 2—Threatened Abortions

CASE	AGE	NUMBER ABORTIONS	WHEAT GERM OIL THERAPY	RESULTS	REMARKS
E. R.	19	0	Begun at second month. Continued throughout.	Terminated 2 weeks early. Living child 6 lbs., 12 oz.	Small placenta.
M. R.	20	0	Begun at fourth month. Intermittently throughout.	Full term. Living child 7 lbs., 5 oz.	Large white scarred area at margin of placenta.
B. S.	26	0	Begun before L.M.P. Continued throughout.	Full term. Living child 6 lbs., 6 oz.	Weight of placenta, 480 grams. Some scarring.

A more careful examination of the results obtained in this small series reveals many points worthy of mention. In the case which terminated at 8 months, the elevated blood pressure, uterine pain, backache, and the characteristic placenta certainly place this patient in the category of abruptio placentae. This patient had begun therapy with wheat germ oil before becoming pregnant and had discontinued it voluntarily after the fourth month. It has been shown by Shute and others that cases of abruptio placentae, real or impending, show an excess of estrogenic substance in the blood serum (*vide supra*), and furthermore, it has been shown that Vitamin E is antagonistic to, or inhibits the formation of the excess estrogenic substance. Hence it is quite possible that in this case abruptio placentae developed as a direct result of the withdrawal of Vitamin E.

In the case that ended spontaneously after the fourth month, no such explanation is forthcoming. However, it is of significance that here the therapy was not instituted until after the patient had passed the second month of pregnancy; furthermore, this patient would never follow any instructions, nor could she be controlled in regard to her habits during pregnancy. Her first attack of bleeding began some time after taking a douche. Even though she would assure me that she was desirous of saving her baby, the problem soon resolved itself into a battle between the two of us over the maintenance of the pregnancy. When she would bleed and have cramps and was advised to remain in bed, she would take long automobile rides with her husband. After the douche episode she started enemata, and when these were stopped she changed to laxatives by mouth. Finally, I gave up trying and then she promptly aborted. A review of her history would make one think that barring her conduct and lack of coöperation, focal infection might have been a factor in this case. Microscopic examination of the placenta revealed infarction and villi with many syncytial buds. These masses of cells which seemed to be present in larger numbers than found in a placenta at this age may represent an attempt to form new villi and thus to anchor a placenta which is about to be set free by virtue of infarction. The placenta from the case which terminated two weeks early lacks significant findings except for reduction in size, weighing less than 480 grams, and measuring 6 by 7 inches.

The series is entirely too small to allow for any definite conclusions, but in general it can be said that Vitamin E, when administered early and in sufficient quantities, does have some value in recurrent and threatened abortions. The product must be started when possible before conception occurs and certainly as early in pregnancy as feasible, and continued through to term. However, once a patient has started to bleed and to have cramps and backache, then one must have complete faith in an ever-watchful Providence to believe that wheat germ oil will stem the bloody tide.

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MATERNAL MORTALITY*

	Discharges	*Deaths*
Lying-In Hospital (Indoor)	3,439	8
Berwind Service (Outdoor)	676	0
Total	4,115	8

Maternal Deaths: (All patients on the Berwind Outdoor Service requiring hospitalization are transferred to the Lying-In Indoor Service of the New York Hospital):

Eight (8) maternal deaths in 4,115 discharged patients.

Gross maternal mortality (including abortions, ectopic, and other) = 0.194% or 1.94 per thousand discharged patients.

These 8 deaths were as follows:

1. Antenatal patients (dying before delivery)	0
2. Postpartum (Full Term and Premature Deliveries)	8
3. All other patients (Abortions and admitted Postpartum)	0
Total	8

INFANTILE MORTALITY*

Total infantile mortality includes all full term and premature infants, deadborn, stillborn, or dying within 14 days following birth in the Lying-In Hospital Indoor Obstetrical Service and Berwind Outdoor Obstetrical Service. An abortion is any foetus weighing less than 1,500 grams, or measuring less than 35 cm. in length. Abortions are not included in the Total Infantile Mortality.

	Total Infants	*Deadborn and Stillborn*	*Neonatal Deaths*	*Total Deaths*
Lying-In Hospital (Indoor Service)	2,767	57	36	93
Berwind Service (Outdoor Service)	676	10	5	15
Total Infants	3,443	67	41	108

Gross Infantile Mortality = 3.14%

* *Extract from Annual Report, The Society of the Lying-In Hospital of the City of New York, 1937, p. 46, 47.*

THE EYE IN DIABETES MELLITUS*

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Diabetes mellitus is accompanied by numerous changes in the eye, some of them organic and others functional. There is considerable question, however, as to whether these disturbances result from the impaired metabolic state or whether they are dependent upon the premature senility of tissues that accompanies diabetes. In this paper an attempt will be made, so far as possible, to separate the various clinical pictures found and to assign them an etiologic factor.

Temporary Refractive Changes

Most characteristic of diabetes are the temporary refractive changes. The patients first notice blurring of vision, and on examination the lenses are found to be clear, and that the change of refraction has occurred in both eyes. That this disturbance is due to changes in the lens is demonstrated by the fact that it does not occur in aphakic eyes. Consequently the theory that it is due to alterations in the blood-sugar content of the lens is not a valid one. Also the fact that a simple increase of blood sugar in the aqueous and vitreous is not the underlying fault has been demonstrated experimentally by showing that the sugar content of these structures would have to be about 5 per cent in order to produce these changes, whereas it very rarely exceeds 1 per cent. Adler[1] has offered the theory that the refractive alterations are due to the change in the sugar content of the aqueous and vitreous with relation to the changes in the blood-sugar level. Thus he theorized that if the sugar concentration in the aqueous increased while that of the vitreous remained constant, myopia would result; and that if the sugar in the vitreous were high and that in the aqueous alone dropped, hyperopia would develop. He believed that this mechanism occurred, since the aqueous reached equilibrium with the blood much more rapidly than the vitreous. This again does not explain why this mechanism should not operate in aphakic eyes, as after cataract extractions.

Krause[2] felt that these refractive changes took place in the lens, and explained them on disturbances in the acid-base equilibrium. If the pH of the blood is lowered by the entrance of carbonic and other acids which can diffuse through the capsule and cells of the lens, the osmotically active ions of the lens are increased; the lens swells and the patient becomes myopic. The lenticular protein becomes osmotically less active through the replacement of the active carbonate ion. The acidification with carbonic acid or other diffusable acids leads to the swelling of the lens and to dilution of its total base content. Alkalization has the reverse effect and produces hyperopia.

These transitory refractive changes occur in those patients with shifting blood-sugar levels. The change in the refraction may be within a range of $\frac{1}{2}$ to 7 diopters, and it occurs both in the younger patients and in the older ones. With the stabilization of the blood sugar, the refractive state also tends to become constant.

Cataract

Cataracts are very frequently seen in patients suffering from diabetes, and because of this relationship these have been labelled diabetic cataract. However, it must be borne in mind that elderly individuals show a considerable percentage of lens opacities whether or not diabetes is also found. Numerous attempts have been made to clarify this problem. O'Brien, Molsberry and Allen[3] have studied a series of 214 patients with senile cataracts, and found that 41.6 per cent had a blood-sugar level above 120 milligrams per cent. They thus felt that hyperglycemia did have significance in the causation of senile cataract. Andersen,[4] however, in examining a large series of patients found that the percentage of cataracts was approximately equal in both diabetics and nondiabetics of the same age group. This was confirmed by the findings of Kirby and Wiener.[5] It is most generally felt that in the elderly individuals the cataracts are of the senile type, but that senility occurs possibly somewhat prematurely in diabetics, and that cataracts occur therefore at an earlier average age.

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* Read before the Section on Internal Medicine of the Society, January 28, 1938.

There is one type of lens opacity, however, that is quite definitely of diabetic origin. In this variety, small flocculent opacities occur beneath the anterior and posterior capsules of the lens. These are present in the youthful diabetics, the youngest patient reported having been 11 months of age. If treatment is instituted promptly, it has been noted that some of these opacities tend to disappear. In untreated cases, however, the progress is rapid and leads to total opacification of the lenses, giving a milky white appearance. The exact mechanism of the production of this type of lens opacity is unknown. The hypothesis has been advanced that it is due to a disturbance of the water balance, so that fluid enters the lens and causes changes in the superficial fibers. If treatment is started early this flow of fluid will be reversed and the opacity cleared up. However, if treatment is not instituted until after degenerative changes have taken place in the lens fibers, then clearing up of the opacities cannot be expected. The increased blood sugar alone cannot explain this, because many diabetics go on for long periods with high blood sugars and do not develop lens opacities.

In the days before the use of insulin, the extraction of cataracts from patients with high blood-sugar levels was fraught with considerable danger, since a large percentage of them lost their eyes from suppurative changes. Since the institution of insulin therapy and its control of the blood-sugar level, the risk in cataract surgery is not much greater than in the nondiabetics.

IRITIS

Waite and Beetham[6] after studying a series of 2,002 diabetics concluded that there is no distinctive diabetic iritis. McKee[7] in his series of 1,272 cases could find iritis in 2 only. The description of the so-called diabetic iritis is usually that of a gelatinous plastic exudation into the anterior chamber, but one that does not respond particularly well to the control of the diabetes without using local therapy.

Histologic study does reveal a characteristic diabetic change in the iris. The pigment epithelium on the posterior surface of the iris is found to be swollen and the cells vacuolated. The pigment granules are easily liberated from the swollen cells, and are thus scattered over the anterior capsule of the lens and posterior corneal surface. It is a matter of discussion as to whether this characteristic change in the iris epithelium does not play a rôle in the disturbed nutrition of the underlying lens, although no evidence has been offered to support this view.

RETINAL LESIONS

The retinal changes seen in diabetes which are termed "diabetic retinitis" are characterized by a number of punctate hemorrhages and white patches around the macular region. Although this condition was first described by Jaeger in 1855, shortly after the advent of the ophthalmoscope, the discussion is still going on as to whether these changes are due to the diabetes, or whether the vascular lesions do not explain the entire picture. In this respect it is important to note that the retinal changes are encountered only very rarely in youthful diabetics, in whom the severity of the condition is more pronounced and the blood-sugar levels are higher than in the older groups. In Wilder's[8] series of 1,471 diabetics at the Mayo Clinic, 132 were found to have retinal hemorrhages, and only 4 of these were under 40 years of age. Waite and Beetham found 4 per cent of their patients under 40 years of age to have retinal hemorrhages, while it was seen in 10 per cent between 40 and 50 years, and in 86 per cent over 50 years. The fact that the hemorrhages are found to be situated deeply in the retina points to their capillary origin, so that it does not necessarily follow that with the ophthalmoscope the larger retinal vessels need show visible evidences of sclerosis. Where the latter does occur, hemorrhages will be found frequently. Also these retinal changes apparently have no relationship to the blood pressure or to the renal function. The trend among recent workers in this field has been to account for this picture on a vascular basis rather than on the diabetes alone, although it would seem that some causal connection exists between the diabetes and the type and distribution of the accompanying arteriosclerotic process.

The white patches distributed in the macular region have a more clear-cut and waxy appearance than the fluffy exudates seen in the purely vascular retinal disease. On histologic section these patches are seen to be masses of colloid in the outer layers of the retina, and have a very similar appearance to those observed in arteriosclerosis and in "albuminuric" retinitis. Waite and Beetham feel that they arise through hyalinization of the deep retinal hemorrhages, since they correspond closely to these in distribution, position in the retina, and similarity of the incidence curve. With the duration of the retinal lesion the exudates tend to lose their clear-cut margins, and when they become confluent in the macular region they closely resemble the picture of "albuminuric" retinitis, although a star-shaped pattern is very rare.

As previously mentioned, the severity of the disease plays a small rôle, but the age of the patient and the duration of the diabetes are most important. Braun[9] in his series found that the retinitis usually appeared 5 to 10 years after the onset of the disease, and more frequently in older people. In this group it has been found by many observers that there is no relationship to the blood-sugar lever, for the majority of patients showed only a moderate elevation of this level. Also, the use of insulin and the dietary control of the blood sugar were without effect either in clearing up the retinal lesions or in preventing their progression.

Since the advent of insulin, lipemia is scarcely ever seen, although even in pre-insulin days it was a rare occurrence. This condition gives rise ophthalmoscopically to a peculiar yellowish-white color of the eyeground. Since the lipoid content of the blood is markedly increased, the retinal vessels will have an almost white color. Because the changes are practically entirely in the blood, no definite histologic lesions are found. Many observers feel that the fat content of the blood must reach at least 5 per cent before lipemia retinalis becomes manifest. McKee and Rabinowitch,[10] however, found that a lipemia as low as 1.13 per cent still produces retinal changes. The patients are usually young and death occurs rapidly, although a few recoveries have been recorded.

Changes in the Vitreous

It is a well known fact that in diabetic coma the tension of the eyeball is subnormal. In 6 cases of coma examined by Gray,[11] he found that the intraocular tension was lowered in 5, but returned to normal in 30 to 80 hours after inauguration of therapy. Waite and Beetham had 113 cases of coma with lowered intraocular pressure in their series, but in only 1 fatally terminating case was there observed a negative pressure with a collapsed cornea. This subnormal tension is the result of the dehydration of the intraocular fluids and is comparable in degree to the dehydration occurring in other parts of the body. With replenishment of the body fluids the ocular tension returns to normal.

Besides this dehydration occurring in coma, the vitreous is also involved by hemorrhages arising from the retinal circulation. These hemorrhages tend to recur, and the ultimate prognosis for useful vision is poor, since they become organized and the resultant contraction of this connective tissue causes detachment of the retina. It has been claimed that the use of insulin tended to increase the frequency of these hemorrhages, but this is not borne out by observation. The underlying factor in these vitreous hemorrhages is the sclerotic disease of the retinal arterial tree.

Retrobulbar Neuritis

There will occasionally be seen a diabetic who has been going along in a well controlled condition, and who suddenly complains of impaired vision. No alteration of his refractive state can be found, and ophthalmoscopic examination reveals no abnormalities. The visual field, however, will reveal a central scotoma, which together with the normally-appearing optic nerves points to the presence of retrobulbar neuritis. It occurs in middle-aged patients and seems to bear no relationship to the severity of the diabetes. Again the question arises as to whether this damage to the optic nerve fibers is due to the diabetes or to some other factor. DeSchweinitz and Fewell[12] believe that the nerve fibers in diabetics are much more susceptible to the toxic action of tobacco or alcohol, and that the abstinence from these will cause improvement, unless degeneration has already occurred. Kako[13] found that in only 2 of 16 cases could alcohol and tobacco be excluded as a cause. Nevertheless Reber[14] has reported 1 case and Moore[15] 2 cases, in which tobacco had never been used. Also, O'Donoghue[16] had 2 cases which cleared up in spite of the continued use of tobacco.

Ocular Palsies

Waite and Beetham in their series of 4,001 eyes found 16 with paralysis of one or more ocular muscles, the most common one being the external rectus. These bore no relationship to the blood-sugar levels or to the duration of the disease. Because of the sudden onset of the paralysis and its slow disappearance, they suggested minute hemorrhages as the possible cause, but they did not specify whether these occurred in the muscles or in the nerves supplying them. Although the sixth nerve is most commonly involved, many authors have reported third nerve disturbances with involvement of the sphincter pupillae, levator palpebrae, etc. It is difficult to believe that hemorrhages along the nerves are the cause of this condition, since it resembles the general peripheral neuritis so often seen in diabetes, and like this latter condition tends to clear up over a period of time with proper treatment.

Summary

In thus examining the ocular lesions found in diabetes, it is striking that only the changes in the lens can be definitely shown to originate from this disease. The senile type of cataract must be excluded from these characteristic lenticular changes, since only the alterations in the refractive state and the juvenile opacities offer a clear-cut clinical picture. The presence of senile lenticular opacities and of the retinal lesions indicate that diabetics as a whole are much more liable to an early senility than are nondiabetics, although how these factors operate to produce these tissue changes is as yet unknown.

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PRESENT-DAY TREATMENT OF TUBERCULOSIS IN THE SANATORIA OF THE DISTRICT OF COLUMBIA*

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Since rest is the sheet-anchor in the treatment of pulmonary tuberculosis all patients are put to bed during the period of fever; and following this they are in bed for daily rest periods over an indefinite length of time, which is followed by a period of graduated exercises.

The tuberculin test is a diagnostic effort of limited but definite value. In our opinion the most practical is the intradermal or Mantaux test. In infants under 2 years of age positive reactions are of great significance. As the age of the child increases it becomes less significant, since the percentage of positive reactors increases with age. In adult life it is estimated that in some localities probably as high as 90 per cent of individuals react positively, although in other localities not more than 50 per cent react positively. Nevertheless, it is quite evident that the practical value of the test decreases as the age increases. In the children's unit of the Tuberculosis Sanatorium all patients receive the tuberculin tests routinely. Tuberculin is not used in this sanatorium for treatment except in tuberculous infections of the eye.

During the past decade we have heard much concerning collapse therapy in the treatment of pulmonary tuberculosis. This institution has made every effort to keep abreast of the times. It has been our aim to consider collapse therapy as a possible adjunct in every case of pulmonary tuberculosis. We do feel, however, that it is wise to be conservative, and we do not recommend any form of collapse therapy until the case has been discussed first by the resident house staff and then at the general medical and surgical conference held twice each month. We do not believe it a safe rule to make the statement that in a case once diagnosed pulmonary tuberculosis collapse therapy is immediately indicated. We feel that each case is a law unto itself.

There is no doubt that collapse procedures have taken an important place in the treatment of pulmonary tuberculosis. There are several methods employed, all directed toward collapsing the lung as a whole, collapsing the tuberculous cavity in the lung, lessening the size of the chest on the affected side, and limiting respiratory movements. The various methods of procedure for collapse therapy may be grouped as (1) collapsing the lung by the introduction of air into the pleural cavity—pneumothorax, (2) cutting the adhesions between the lung and the parietal pleura—pneumolysis, (3) temporary or permanent paralysis of the hemidiaphragm by crushing the phrenic nerve or by resection of the phrenic nerve, and (4) collapse of the chest wall and lung by removal of the ribs—thoracoplasty.

Many writers from time to time have listed indications and contraindications for pneumothorax. We believe that these indications and contraindications can only give us a starting point to work from and that each case must be considered individually because of the fact that occasionally pneumothorax is instituted under conditions that are specifically stated contraindications, and frequently in these cases favorable results are obtained. Two of these specific indications for pneumothorax are early lesions that show progression by serial X-ray films, and hemorrhage, if it can be determined from which side it comes. In the latter connection it might be of value to mention that very frequently the patient can tell the physician with great accuracy from which lung the hemorrhage is coming, and when the patient states that he is bleeding from a definite point the physician should not dismiss this statement without very careful consideration. The value of pneumothorax in cases of hemorrhage, of course, is to control the bleeding. While sometimes a small amount of air injected, 200 cc., may control the bleeding, it is recommended in ordinary cases, provided the pressure is not increased too much, to inject approximately 500 cc. or 600 cc. In cases of pleural effusion it is recommended to replace fluid withdrawn with air. The quantity of air should be approximately 50 per cent of the amount of fluid withdrawn. It is believed at this institution that any case of unilateral tuberculosis with cavitation should be considered for pneumothorax. However, if pneumothorax fails, we do not believe that it necessarily means that the patient must have thoracoplasty. We believe that if the cavity is small and the total amount of involvement is not great, failing pneumothorax the patient should have a period of absolute bed rest before more radical measures are instituted. We know definitely that in many such cases the cavity has closed with no other treatment. In bilateral cases which remain more or less stationary, and in bilateral cases with cavities on both sides bilateral pneumothorax may be instituted. There are certain non-tuberculous conditions which may be treated by pneumothorax and in which definite results may be obtained. The first of these is lobar pneumonia. In pneumonia it is recommended very strongly that the pneumothorax be instituted on the second day, if possible, and certainly not later than the third day. In some cases of acute lung abscess excellent results have been obtained by the use of pneumothorax. In this condition one must consider the location of the abscess. If it is near the periphery, there may be danger of rupturing the pleura with empyema resulting. On the other hand, one must not through the use of pneumothorax cause the kinking of a bronchus and thereby cut off the drainage from the cavity. It is our belief that for good results in the treatment of lung abscess small amounts of air should be given at each injection, just enough to splint the abscess. The case should be studied carefully and frequent X-ray films made during this form of treatment.

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Contraindications for the use of pneumothorax are varied and numerous as listed by various writers. Again, the case must be considered purely on its own merits. The one condition that causes failure more frequently than any other in pneumothorax is the presence of adhesions. Once again it is to be emphasized that you can not determine definitely whether or not there are adhesions present that will interfere with the collapse until pneumothorax has been tried. Frequently, even if adhesions are present, you may still get a collapse that will produce satisfactory improvement in the patient's condition. It has sometimes been stated that advanced intestinal tuberculosis and tuberculosus laryngitis are contraindications. However, this is a matter of controversy and we have occasionally obtained very excellent results in such cases. It is considered that the optimal age for the introduction of pneumothorax in cases of pulmonary tuberculosis is between the ages of 18 and 35 years. This would preclude the use of pneumothorax in children, but we have had very excellent results with children as young as 8 years of age. We have introduced pneumothorax and have been able to obtain very good collapse in children as young as 2 years of age. However, in the very young group from 2 to 8 years of age, we have not had very satisfactory results that we could attribute to the pneumothorax. It has been most difficult to continue collapse in these children, mostly because of their fear and inability to lie still long enough for the needle to be introduced and the pleural cavity filled with air.

At this point a word concerning ambulatory pneumothorax may be inserted. Because of economic reasons artificial pneumothorax has been instituted frequently in early cases of pulmonary tuberculosis, and the patient has been returned to work within a very short period of time. We must admit, however, that we feel that this is not a safe procedure to allow the patient to leave the sanatorium at an early date. The longer he remains, the more he learns about tuberculosis, the methods of treating, and the proper way to continue the treatment at home in order not to be a menace to those with whom he comes in contact. Our experience has taught us that sometimes in these so-called ambulatory cases when they leave the institution and return to the clinics for refills, the cavity may not be completely closed, and in a refill service where the patient may not get as much individual attention as though he were constantly hospitalized, the tubercle bacillus may be present in the sputum and may be overlooked in the clinic. In such cases the patient is not only a danger to those with whom he comes in contact but also is a definite danger to himself.

Phrenic-nerve operations, either temporary or permanent, are employed to aid in obtaining collapse of the lung and reduced motion of the lung, and are usually employed in conjunction with other methods of collapse therapy. Occasionally phrenic nerve operations are performed when other methods of collapse can not be used or when they have failed. Although temporary or permanent paralysis of both sides of the diaphragm may be employed, usually only one side is operated upon. Indications for phrenic-nerve interruption are basal lesions, in which instances the condition is often benefited. It may be used in addition to pneumothorax especially where cavities are held open by adhesions. The rise of the diaphragm may cause enough relaxation of the adhesion to allow closure of the cavity by continuing the pneumothorax. It has also been used in cases in which no collapse at all may be obtained by pneumothorax. There seems to be some controversy as to whether or not phrenic-nerve interruption should be used as a preliminary measure for thoracoplasty. Some surgeons prefer the phrenic-nerve interruption preceding thoracoplasty and some feel that this preliminary step should not be taken before a thoracoplasty. It has occasionally been used in cases of hemorrhage. It may be used for economic reasons when the patient refuses to remain hospitalized, or when the patient will not permit a pneumothorax because he feels that he must return to work and that he will not be able to return for numerous refills. It has been used with success in non-tuberculous cases such as bronchiectasis and lung abscess. Contraindications for phrenic-nerve interruption are listed as acute progression of the disease, thick-walled cavities and undrained empyema; advanced intestinal tuberculosis and laryngeal tuberculosis have been considered as contraindications.

Oleothorax has a limited but very definite field. Probably its greatest value is its use in cases of tuberculous empyema not contaminated by secondary organisms. The effusion should be withdrawn and oleothorax instituted. It has been used to advantage as a substitute for pneumothorax refills when it would be impossible for the patient to get pneumothorax refills at regular intervals. It has also been used occasionally to great advantage in cases of creeping adhesions in cases in which the lung is gradually re-expanding in spite of the pneumothorax.

Scaleniotomy is used occasionally, the procedure being to section the anterior, middle and posterior scalene muscles, use being made of the usual incision for phrenic-nerve interruption. This allows the first and second ribs, which are supported by these muscles and to which these muscles are attached, to drop for a short distance. This procedure will produce slight collapse of the apical portion of the lung. Scaleniotomy is used only in conjunction with phrenic-nerve interruptions. It is indicated in only a few cases and is not used very extensively in this institution.

In a fairly large percentage of pneumothorax cases, it will be found that there are adhesions between the lung and the parietal pleura which prevent satisfactory collapse and closure of cavities therein. This is the greatest cause for failure of pneumothorax. We believe that in all cases of pneumothorax in which adhesions are present great care should be exercised and the adhesions stretched as far as possible. If a satisfactory collapse can not be obtained, pneumolysis should be considered. We have found that it is not wise to rely upon the X-ray picture alone in determining whether or not pneumolysis will be tried. In all cases in which we would like to do a pneumolysis the thoracoscope should be introduced into the pleural cavity and the surgeon should look directly at the adhesions and determine at that time whether or not he can sever them. Pneumolysis is the greatest help to a successful pneumothorax that is known today. We feel very definitely that pneumolysis in the presence of pleural fluid greatly increases the danger of empyema developing.

Thoracoplasty is employed to obtain collapse of the lung when other and simpler methods can not be used, or when they have been employed and have failed to bring about the necessary amount of collapse. Thoracoplasty is usually reserved for those cases of tuberculosis with cavity formation in the upper part of one or both lungs and in which the cavity is encircled by fibrous tissues. The operation is performed in stages, our practice being to take out no more than three ribs in the first stage. Sometimes only two ribs are removed, depending upon the condition of the patient. Usually it is necessary to do a two-stage operation and remove a total of approximately six or seven ribs. Occasionally three stages are necessary, and infrequently one stage will be sufficient. We consider thoracoplasty in all cases of pulmonary tuberculosis with a positive sputum that can not be cleared up by other procedures. Here again, the indications and contraindications of the individual case must be considered on its own merits. Occasionally we have used pneumothorax in the better lung of a far-advanced bilateral case of a preliminary step to thoracoplasty on the opposite side. In some instances we have continued pneumothorax to a slight degree in the better lung while the patient was undergoing the thoracoplasty operations on the opposite side. After it has been definitely decided that a thoracoplasty will be performed, the principal thing to consider is the patient's general condition. The same complications that would preclude any other major operation would preclude thoracoplasty, principally heart and kidney complications. If a patient is to obtain the full benefit of thoracoplasty with the least risk he must be given very careful preoperative and postoperative care. Other things being equal, nursing care will greatly reduce the mortality from thoracoplasty.

In consideration of the methods of mechanical rest of the lungs, it must be kept in mind that the details of the rest routine mentioned at the beginning of this paper should be carried out at the same time and that the mechanical procedures herein outlined are simply an aid in the cure and not a cure in themselves.

While much has been done within the past few years in regard to collapse therapy and some very excellent results have been obtained, sufficiently serious consideration has not been given to the rehabilitation of the patient. No campaign for the eradication of tuberculosis can be complete without some serious thought to rehabilitation which should include follow-up and replacement. This is perhaps the most difficult and also perhaps the most neglected phase in our management of the tuberculous case today. In the children's unit of the sanatorium we have very fortunately been able to develop what might be considered almost a complete rehabilitation program. As patients that are confined to bed improve sufficiently, they are given bedside instruction by qualified teachers in their ordinary classroom work. They are also given a certain amount of occupational therapy. For those children that are able to be up and going to their meals, classroom work is carried on in which the children receive the same instruction that they would get if they were at home and attending the public schools. This teaching is supplemented with occupational therapy and controlled recreational activities. In the adults' unit the rehabilitation program has been fostered by the District of Columbia Tuberculosis Association in coöperation with the Federal Government. At the present time teachers are provided that carry on instruction in various subjects and with the idea always in mind of training the patient so that he may become self-supporting when he returns to economic life.

In this paper we have attempted to review very briefly the treatment that a patient may expect to receive at the Tuberculosis Sanatorium of the District of Columbia. We feel that it is a well-rounded program of treatment in which the problems of the patient are considered as an individual rather than by general rules that do not apply in many of the individual cases.

ENDOBRONCHIAL TUMORS: DIAGNOSIS AND TREATMENT*

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The diagnosis of endobronchial neoplasm is not difficult if it is always kept in mind as a possibility in making a differential diagnosis of various pulmonary lesions. No attempt is made to treat the subject thoroughly in this paper. A plan of study is outlined that is believed to be thorough and will result in correct diagnosis in practically every case. The author has had 23 cases of endobronchial tumors during the past 12 months. Four have been excluded from this report because the diagnosis was not confirmed. Although the cases excluded clinically, by X-ray and by bronchoscopic evidence, were bronchogenic carcinomas, the necessary complete diagnostic study, to be discussed later, could not be done. This paper is therefore limited to a consideration of the remaining 19 cases in which diagnostic studies were completed and a positive diagnosis reached in every instance. Ten were bronchogenic carcinoma of the right bronchus and 6 were bronchogenic carcinoma of the left bronchus. Three were benign neoplasms. A more detailed report will appear in the Southern Surgeon at a later date.

Symptoms

The early symptoms of endobronchial tumors, both benign and malignant, are due to bronchial irritation. The signs are due to bronchial stenosis and obstruction. In reality the signs are not of the tumor *per se* but of the complications—atelectasis, suppuration, abscess, effusion, etc. The earliest symptom is dry cough. This is true in both the bronchial and the peripheral types. The cough may be productive, however, of a small amount of mucus. The sputum contains pus only after infection has occurred. Hemoptysis indicates ulceration of the bronchial mucosa. Pus in the sputum, hemoptysis or blood-streaked sputum indicate relatively late symptoms. It is most unfortunate that many patients with tumor are treated several months and sometimes a year or more as cases of bronchitis. Often the onset is with an acute severe respiratory infection and a diagnosis of pneumonia or influenza is made. When convalescence is delayed, several weeks later a roentgenogram is frequently interpreted as "unresolved pneumonia," "abscess," or "pneumonitis." In my series of 16 proven cases of bronchogenic carcinoma 6 had been diagnosed pulmonary tuberculosis. Two of these 6 patients had been in a tuberculosis sanatorium 5 and 7 months, respectively, without positive sputum.

The signs and symptoms of bronchogenic carcinoma vary according to the location of the lesion and to the extent of bronchial, peribronchial, and parenchymal involvement. They also vary according to the type, i.e., the bronchial or the peripheral. The predominating and frequently the only symptom in the early bronchial type is cough. There may or may not be a wheeze. Physical examination is negative. There is seldom if ever blood-tinged sputum or hemoptysis because the bronchial mucosa has not become ulcerated. Because the tumor at this stage is not sufficiently large to completely obstruct the bronchus the routine roentgenogram is negative. It must be remembered that there is no X-ray appearance characteristic of an early endobronchial tumor. A carefully performed bronchoscopy will not only reveal the tumor, but a bronchoscopic biopsy will reveal the type of tumor.

Signs and symptoms of the late bronchial type. Cough is still the predominating symptom. Dyspnea is common. The sputum is mucopurulent or foul and is due to a superimposed infection in the pulmonary tissue distal to the obstructed or stenosed bronchus. The sputum becomes blood-streaked after ulceration of the bronchial mucosa occurs, or there may be frank hemoptysis. Fever, pain, anemia, and loss of weight are common. A roentgenogram shows evidence of atelectasis or abscess, or it may resemble tuberculosis. Inspiratory and expiratory X-ray films will frequently show a shift of the mediastinum. The diaphragm on the diseased side is elevated and the ribs are closer together than on the normal side. A diagnostic bronchoscopy and biopsy reveals the diagnosis.

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Signs and symptoms of the early peripheral type. Cough is the only symptom. Wheeze is absent. Physical examination as a rule is negative, but a few fine râles may be heard suggestive of tuberculosis. A roentgenogram may suggest pulmonary tuberculosis, abscess or pneumonitis. The film is frequently interpreted as unresolved pneumonia. There may or may not be loss of weight. As a rule, severe pain is absent, but there may be some discomfort.

Signs and symptoms of the late peripheral type. Cough is present and is productive of mucopurulent or foul sputum. The sputum may be streaked with blood or there may be hemoptysis. Dyspnea is usually present to a varying degree. Pain, which gradually increases in severity, weakness, progressive loss of weight and anemia are present. There may be hoarseness of the voice, or there may be a Horner's syndrome due to involvement of the recurrent laryngeal nerve or the sympathetic nerve, respectively. The roentgenogram shows pulmonary infiltration, sometimes with atelectasis. This type is frequently diagnosed abscess. Fibrosis and atelectasis produce retraction of the trachea toward, and an elevation of the diaphragm on, the diseased side. Abscesses are multiple and are irregular in outline.

Table 1 shows an analysis of the symptoms of 16 cases of bronchogenic carcinoma and the diagnoses which had been made before admission to the hospital.

Four of the 6 patients who had severe pain had abscess formation, and 3 of these had metastases. The other 2 had metastases to both axillary and cervical lymph nodes. This analysis indicates that severe pain signifies a far-advanced lesion with probable metastasis, or a complication, or both.

PLAN OF STUDY

In order to diagnose as many endobronchial tumors as possible it is necessary to adopt a systematic plan of examination. The following plan has resulted in a positive diagnosis in over 82 per cent of the patients whom I have studied during the last 12 months.

1. Carefully taken history, physical examination, and an analysis of the symptoms are essential, of course.

2. X-ray films of the chest and proper interpretation of them are imperative. In addition to the routine posterior-anterior projections, a lateral, with the diseased side against the film, and oblique projections are of definite diagnostic value. If there is pain in the joints or bones, especially in the long bones, in the spine or pelvis, X-ray films of these parts should be made in a search for distant metastases. Pulmonary parenchymal infiltration is present in a varying degree in bronchogenic carcinoma if the tumor is of sufficient size to produce bronchial stenosis and obstruction. Within the atelectatic area central necrosis sooner or later occurs giving rise to multiple neoplastic abscesses. Probably not more than a third of these neoplastic abscesses present a fluid level. As a rule these abscesses are multiple and are more or less irregular in outline in contradistinction to the inflammatory abscess which is rounder. Evidence of atelectasis is the most constant X-ray finding in bronchogenic carcinoma.

3. Bronchoscopy. Many clinicians readily refer a patient with dysuria, frequency or hematuria to a urologist for cystoscopy but reluctantly refer patients with a chronic cough to a thoracic surgeon for a diagnostic bronchoscopy. It is conservatively estimated that 75 per cent of all bronchogenic carcinomas can be seen bronchoscopically. In the present series of 19 proven endobronchial tumors a correct diagnosis was made by bronchoscopy on 82 per cent. The 3 patients in whom a definite tumor was not seen had bronchoscopic findings suffi-

cient to strengthen the clinical diagnosis. Two of the 3 cases were diagnosed by means of surgery, both of whom had large abscesses, and the other by excision of an axillary lymph gland. Bronchoscopic evidence suggestive of a malignant lesion is fixation and rigidity of the bronchial tree, failure of the bronchi to shorten, elongate, contract or expand with the cycles of respiration, and widening of the carina. Principal points in the differential diagnosis of endobronchial tumors are outlined below:

Differential bronchoscopic appearance of tumors

MALIGNANT	BENIGN
Granular, rough, dull. May be ulcerated. May be covered with necrotic membrane. Usually vascular, may resemble granulating tissue.	Red, pink or yellow. Moist, smooth, glistening surface. Sometimes rough.
Broad base, sessile, always embedded.	May be sessile, usually pedunculated, rarely if ever embedded.
Usually flat unless completely filling the bronchus.	Usually round, globular or oval.
Bronchial mucosa always infiltrated.	Rarely if ever infiltrated.
Bronchial fixation, rigidity, deformity, narrowed lumen. Does not contract, dilate, shorten and elongate with respiratory cycles (late sign).	Bronchus usually movable unless atelectasis with superimposed infection exists.
Carina frequently widened, distorted, fixed, rigid. May not be in vertical position, displaced (late sign).	Normal unless involved by the tumor. Shift toward or from diseased side with respiratory cycles depending on partial inspiratory or expiratory block.

Other endobronchial lesions are sufficiently obvious that little difficulty is experienced in differentiating them from tumors.

Considering the above differential points and the diagnostic value of bronchoscopy it is obvious that the bronchoscope is indispensable. I advise a carefully performed diagnostic bronchoscopy on every patient with unexplained cough, hemoptysis, or wheeze, and every case of nontuberculous suppurative pulmonary lesion. The idea—"wait and see what happens" cannot be too strongly condemned. It must be borne in mind that a cough is not always bronchitis; hemoptysis is not always tuberculosis; wheeze is not always asthma. Although Father Time is considered the Great Healer in the majority of diseases he becomes the Great Destroyer in cases of bronchogenic carcinoma.

Bronchoscopy or bronchoscopy with biopsy is not always conclusive. The final verdict comes from the pathologist. If the report of a bronchoscopic biopsy is "inflammatory—no evidence of tumor" it should not be interpreted to either confirm or deny the presence of a tumor. It demands another bronchoscopy. Four of my cases necessitated more than one bronchoscopy before a definite diagnosis was established. Bronchoscopy, showing as it does the location of the tumor as well as its extent, is a valuable aid to the surgeon in deciding whether or not the patient is operable.

TABLE 1

Symptomatic Analysis of 16 Cases of Bronchogenic Carcinoma

Cough			16
Dyspnea (severe in 10, mild in 4)			14
Pain	mild, admitted on questioning	4	13
	moderate	3	
	severe	6	
Blood-streaked sputum			7
Hemoptysis, included in the above			3
Onset as pneumonia or influenza			6
Loss of weight (complaint)			3
Wheeze			1
Diagnosis before admission:			
Pulmonary tuberculosis			6
Bronchogenic carcinoma			3
Carcinoma suspected			2
Others			5

4. Aspiration biopsy. If a tumor is known to be against the thoracic wall and if the X-ray films show a very thick pleura, an aspiration biopsy may safely be done. This was diagnostic of a bronchogenic adenocarcinoma in one of my cases. The method must not be utilized in the presence of infection if good pulmonary tissue has to be penetrated in reaching the tumor.

5. Bronchogram. If the bronchoscopy with biopsy is diagnostic, a bronchogram with lipiodol is not necessary. Otherwise the bronchogram with posterior-anterior, lateral, right

and left anterior oblique X-ray projections often renders valuable information by showing obstruction of bronchi, filling defects, and distortion of the bronchial pattern. In such instances I permit the lipiodol to go only into the diseased side, except for a very small amount that is permitted to pass into the main stem of the good lung so that interpretation of the width of the carina can be made.

6. Surgical biopsy. When an enlarged lymph node is found associated with either a known or suspected malignant lesion the node should be removed for histologic study. This procedure was diagnostic in 2 of my cases; in 1, no bronchoscopic examination was done, and in the other careful bronchoscopic search failed to reveal tumor.

7. Examination of pleural effusion. Fluid frequently masks the interpretation of parenchymal involvement in the roentgenogram. The fluid may be clear or straw-colored early but becomes bloody or blood-tinged later in the disease. It should be aspirated and examined for cancer cells. Withdrawal of the fluid and replacement with air and additional roentgenograms is frequently of value to determine pleural nodules and metastases.

8. Examination of sputum. If the sputum contains necrotic tissue or is thick and purulent, provided the above methods are not diagnostic, it should be examined for cancer cells. Sputum analysis has not been of any diagnostic aid in the present series. Theoretically, it should be of value in obscure cases. It is frequently used in England with some success. Dudgeon and Wrigley published an excellent method for this examination in the Journal of Laryngology and Otology (1935, **50**, 752).

9. Pneumothorax. Introduction of air into the pleural cavity permits better visualization of the mediastinum and pleura and thereby aids in the detection of metastases. It reveals the presence of pleuropulmonary adhesions, and aids the surgeon in evaluating the patient as an operative risk. It gives an idea as to whether operation may be simple, difficult, or virtually impossible. When pneumothorax is not well tolerated because of dyspnea, it is reasonable to assume that additional burden incident to surgical removal of the entire lung would probably be fatal. If the diagnostic pneumothorax is well tolerated it should be continued for a week or 10 days before performing the pneumonectomy. The pneumothorax tends to prevent circulatory and respiratory disturbance upon opening the pleura, facilitates the operation, and lessens shock.

10. Thoracoscopy. This may be of value in peripheral lesions provided adhesions do not prevent a preliminary pneumothorax. In the absence of infection of the parenchyma a section for biopsy may be taken. Possible development of empyema following biopsy from a tumor within infected tissue must not be ignored.

11. Search for metastases. Aside from the X-ray studies mentioned above careful physical examination for enlarged lymph nodes should be made. A careful neurological examination is made to rule out cerebral metastasis.

12. Exploratory thoracotomy. This is used only if the diagnosis cannot be made otherwise. If skillfully performed it is not associated with any greater danger than an exploratory laparotomy. Proper location of the exploratory incision permits dealing with the situation according to indications. I believe thoracotomy is not done as often as it should be. Intrathoracic tumor should be explored when a diagnosis cannot otherwise be made, provided definite contraindications do not exist. See Table 2 for a diagnostic summary of the 19 endobronchial tumors.

OPERABILITY

Whether or not a given patient is operable can be determined only after the chest has been opened in some cases. Distant metastases obviously preclude surgery.

Involvement of the carina contraindicates pneumonectomy. In any case surgical judgment of the operator is a great factor. This judgment is good or bad in direct proportion to the surgeon's ability accurately to interpret the diagnostic studies and just as accurately to evaluate his own skill and experience in handling the difficulties indicated by these studies.

PREOPERATIVE PREPARATION

Adequate preoperative preparation cannot be too strongly emphasized. The patient usually has already been weakened by complications. Careful attention should be directed to the fluid balance. The routine urine and blood studies should be done. Transfusion of blood is done routinely, several times if necessary. Electrocardiographic studies should be made. Just before the operation a cannula should be inserted into a vein so that fluid, blood, or medication may be given as indicated.

TREATMENT OF BENIGN NEOPLASMS

These can usually, but not always, be removed in one or more sittings bronchoscopically. If peroral removal cannot be done, lobectomy or pneumonectomy should be considered depending upon the location of the lesion and severity of the symptoms. The 3 benign neoplasms in this series were treated bronchoscopically with complete relief. They necessitated 1, 4 and 5 bronchoscopic sessions, respectively. An endobronchial polyp was found incidental to a diagnostic bronchoscopy for a dry persistent cough associated with a mediastinal dermoid. The tumor was removed over 6 months ago and the patient is still free of symptoms. One patient, 64 years of age, had a benign papilloma in the lower right lobe. Pieces of tumor were removed 5 times. He has gained weight and feels well but has a slight residual cough. The X-ray films show marked clearing of the atelectasis. It is improbable that all of the tumor was removed because a part of it was located in the smaller bronchi. If this patient were younger, a lobectomy would be advisable. The other benign tumor presented only inflammatory tissue. A bronchoscopic examination done 3 weeks after removal of the tumor showed no evidence of remaining tumor. He has not returned for a checkup examination.

TABLE 2

Diagnostic Summary of 19 Endobronchial Tumors

Bronchoscopy with biopsy	14
Aspiration biopsy (no bronchoscopy)	1
Lymph gland (1 with, 1 without bronchoscopy)	2
Surgical (both abscesses)	2
Patients bronchoscoped	17
Patients not bronchoscoped	2
	Per Cent
Bronchoscopic diagnosis	82+

TREATMENT OF MALIGNANT NEOPLASMS

The poor results with X-ray and radium therapy in past years has greatly stimulated the surgical management of bronchogenic carcinoma. Surgical treatment may be palliative or radical. One of my patients obviously had an inoperable bronchogenic adenocarcinoma with the classical symptoms of a superior pulmonary sulcus tumor. Pain was intense. A cervical cordotomy was done. He lived 6 months in relative comfort. Space does not permit a detailed description of the technic for lobectomy or pneumonectomy. Both operations are now acceptable procedures throughout the world. Lobectomy versus pneumonectomy for bronchogenic carcinoma, in certain locations, is a subject of considerable debate among thoracic surgeons. I do not believe a lobectomy should ever be done for a carcinoma that can be seen with the bronchoscope.

Only 3 of the 16 proven cases of bronchogenic carcinoma in this series were considered to be anything like fair surgical risks and 1 of these patients was questionable. The remaining 13 patients were obviously inoperable because of metastases, age, general debility, etc. One patient had a densely adherent lung. It was technically very difficult to separate. He died 48 hours after removal of the lung. The other 2 patients were surgically successful. Owing to adhesions both operations were difficult. One patient had a neoplastic abscess in the periphery of the lung next to the mediastinum. It was inadvertently ruptured, infecting the pleural cavity. Pneumonectomy was done and dependent drainage established. The postoperative reaction was excellent for 12 days. A pyopericardium due to a streptococcus developed. The pericardium was successfully drained and he did well. Nine days later, 21 days after the pneumonectomy, he died suddenly of a hemorrhage due to necrosis of the severed end of the pulmonary artery. The other patient had a total pneumonectomy more than 7 months ago. He is doing well with no evidence of metastasis. His appetite is good and he has gained weight. His cough and sputum have completely disappeared.

The operative approach for pneumonectomy varies with different operators. A high anterior approach was used in this series with excellent exposure.

Postoperative Treatment

Careful postoperative management of these cases is of paramount importance. Intranasal oxygen or an oxygen tent is used in every instance. I prefer the former because it facilitates nursing care. Blood transfusions are given routinely. The heart should not be overloaded with rapid intravenous injections of large quantities of fluid. I believe that this was a contributing factor, if not the sole cause of the death of 1 patient. There are many other factors, too numerous to mention in this paper. The surgeon must fully appreciate the importance of infinite care during the postoperative period. Slipshod methods and poor judgment in the days following pneumonectomy undoubtedly cost lives which good surgery should otherwise have salvaged.

Summary

1. Nineteen cases of endobronchial neoplasms are reported. Sixteen of these were malignant and 3 were benign.
2. A diagnostic plan of study is outlined.
3. The value of bronchoscopy is emphasized.
4. The importance of preoperative and postoperative management is mentioned.
5. Three cases of total pneumonectomy for bronchogenic carcinoma and 3 cases of benign endobronchial tumors removed bronchoscopically are included.

ABSTRACTS OF PAPERS READ BEFORE THE SOCIETY

"Examination of the External Genitals. Importance as Part of a General Physical Examination,"* **Frederick A. Reuter, M.D.**, Washington.

Close inspection and palpation of the male external genitals is an extremely important part of the general physical examination. It is not uncommon for the physician to "comb" his patient thoroughly in an attempt to make a diagnosis, going so far as to "rummage around" in all the body cavities; yet when he arrives at the external genitals, they are passed over with a furtive glance and, if the general conformation approaches what is conceded to be normal, the examination ends there. So many helpful guides have been obtained by a critical examination of these parts that a study was made of a large group in an attempt to evaluate the importance of such an examination. The result has shown that a careful study of the genitals of any patient in whom a physical examination is indicated is as important and, per square inch, contains as much potential pathology to affect the general health as any part of the body.

Patients were examined and records reviewed in over 3,000 cases including all ages, races and stations in life. This has given a fair cross-section of the genital situation in America today. The disorder for which the patient presented himself was carefully excluded in these records so that only the coincidental findings appear. I will not bore you with statistics resulting from a study of this group. An examination of this sort is simply and quickly done by inspection and palpation of the inguinal and suprapubic regions, the scrotum and its contents, that portion of the leg adjacent to the scrotum, the perineum, and the penis.

The following is a list of some of the conditions observed, any of which might be the unrecognized cause of the illness, or act as a guide to suggest further investigation. Beginning with the inguinal region, we have found:

1. Inguinal gland enlargement as evidence of a serious glandular disease.
2. Unsuspected hernia.
3. Scars of operations and infections, occurring years previously and forgotten.
4. Abnormal suprapubic fat and hair distribution, suggesting endocrine imbalance.

Passing to the scrotal sac, there are:

1. Congenital anomalies of the scrotum, accepted by the patient simply as an unfortunate part of his anatomical development about which there is nothing to be done and, except for its peculiarity, has no importance.

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* Presented February 23, 1938.

This attitude is largely true of anomalies of any of the sex organs, and the patient frequently resents being reminded of it.

2. Chronic sinuses, of tuberculous origin, have been found.
3. Cysts, which become infected.
4. Angiomata, which could cause serious hemorrhage if injured in an accident.
5. Again, scars of previous operation or infection.
6. Disorders of the skin.

Examination of the scrotum may reveal:

1. Scrotum adherent to the testicle or epididymis as evidence of previous or chronic inflammation, perhaps tuberculosis.
2. Small and large hydrocele or hematocele, the significance of which should be determined.
3. In suspected injury to the kidney, such as rupture, I have observed a sharp retraction of the testicle on the side of the injury. This has been a deciding factor in several instances in which further evidence was necessary to arrive at a diagnosis.
4. Congenital anomalies of the testicles and appendages which have an influence on the endocrine system, psychic states, fertility, marital happiness, and allied conditions.
5. Arrested developments and atrophies as an index of previous general or local disease and injuries.
6. Detection of early, unsuspected malignant neoplasms of the testicle, determined by comparing the size, shape, and consistency of each gonad with its fellow, and which could not have been suspected by observation alone.
7. Evidences of past and chronic painless epididymitis as well as the caput of syphilis of the epididymis.
8. Thickening and beading of the vas deferens.
9. Absence of one or both gonads from the scrotum or anomalous placement of them. If absent and abdominal, what is their status and their effect on the present and future of the patient? This is an important question and requires a decision and perhaps an assay of Prolan.

The penis is then examined and shows:

1. Anomalies of every sort, particularly the arrested developments which produce a decided mental and marital obstacle, and again a possible endocrine problem.
2. Fibrous nodules and plagues in the corpora causing painful turgescense, unsatisfactory coitus, and a condition which the patient frequently hesitates to mention, since it might be a reflection on his manly virility. Conditions of this sort may result from infections, trauma, and faulty metabolism.
3. Scars anywhere along the penis should be regarded with suspicion. A collateral blood study done with the notation of penile scars has shown a high percentage of positives in otherwise unsuspected syphilis. These scars are at times difficult to detect because of the folds and pigmentation of the part, but careful inspection will reveal them years after the lesion has been forgotten.
4. Anomalies of the urethra, hypospadius particularly, present many problems. A collateral study of 20 cases of hypospadius by intravenous pyelography has shown a high degree of coincidental upper urinary tract anomalies of congenital origin. Associated anomalies occur sufficiently often when they are observed to be present in the external genitals that my axiom now is: "In the presence of one anomaly, search for others." A resistant gonorrhea will many times be the result of pockets, pouches and ducts formed by membranes and valves of the urethra, often visible by inspection of the meatus, whether terminal or hypospadic. Deviations in erection may cause pain, abnormal deposit of semen, and inability to fertilize.
5. Cysts, abscesses, and foreign bodies may be palpated along the urethra, previously undetected.
6. Urethroperineal sinuses resulting from operation, stricture, or infection can be found by inspection and palpation of the perineum.
7. The necessity for circumcision will be apparent. Every conceivable type of prepuce occurs in this study, from the simple nonretractable to that in which the glans is entirely overgrown, leaving only a pinpoint opening in the center through which a fine stream of urine is ejected as from a balloon, or where multiple small perforations resemble a flower-pot sprinkler. Beneath foreskins are recorded the presence of chancre, calculus, carcinoma, nonmalignant tumors, and ulcerations, their presence known but lightly considered by their host and discovered by the examiner only on retraction of the prepuce.

A separate study of the genital situation in boys between the ages of 8 to 15 years is in process. Over 300 of these have been examined and the preliminary analysis is surprising. The following is a list of the major factors in the order of the frequency in which they occur:

1. The need of circumcision.
2. Cryptorchidism, unilateral.
3. Cryptorchidism, bilateral.
4. Arrested or retarded development.
5. Hernia and hydrocele.

A sufficient number were interrogated to determine if they had ever been examined or advised about correction of these faults, and, with rare exception, neither the parents nor the family physician have ever determined their genital status. The family physician has a real responsibility to these young people. The obstacles in their path as adults are enough without the handicaps and physical effects of neglected or anomalous genitalia. Conditions of this sort lend themselves well to correction with surgery and endocrine therapy as it is practiced today. Some of the patients treated for arrested development and cryptorchidism have lost their nervousness and irritability, regained their appetite and weight, are no longer mentally retarded, and have shown a great change in the general behavior when the gonads became normally placed. Because of the results of this study, it is the belief that a critical appraisal of the external genitals in any age is an important part of the general physical examination.

"UNEXPECTED MASSIVE PATHOLOGY IN THE UPPER URINARY TRACT,"* **Joseph F. Geisinger,** M.D., Richmond, Va.

Symptomatology expressive of disease within the urinary system may vary from explosive frankness to total absence. The present discussion is concerned more particularly with the latter restricted yet important group. It is a test of one's credulity to believe that lesions of massive grades can remain for years concealed within a system so vital as the upper urinary tract and yet with no clinical manifestations whatsoever until brought to light by some sudden crisis or some unexpected disclosure at the autopsy table. The fact, however, has been abundantly established, is well-recognized by urologists, and is further illustrated by a group of cases here reviewed. In addition there has been included for the benefit of the warning it offers the case which presents a chronic urinary complaint of obvious origin and perhaps of many years' standing upon which becomes silently engrafted a much graver lesion, that, without altering the original complacent picture, lurks behind it, receiving no consideration until it has reached a stage perhaps beyond all hope of control. Finally one occasionally encounters a patient whose symptoms mimic a condition unrelated to the urinary tract and are singularly enough relieved by the measures appropriate to that apparent but actually nonexistent condition. It is easy to understand how the kidney can be overlooked in such a situation, except for some fortunate accident or some subsequent development of additional signs not present earlier in the history.

Certain lessons would appear to be visible in this review. When the patient presents an actual symptomatic disturbance, either dramatic or vague, the urinary tract should be included in the clinical survey when the diagnosis is not clear and unequivocal in some other direction. Once the problem has thus been brought to the urologist, special procedures at his command will usually enable him to reach some sort of conclusion helpful to the situation. Danger begins to arise when the atypical behavior of symptoms creates a disregard of the urinary system with the result that the patient never has the advantage of these special procedures, sometimes sadly to his detriment. Upon the urologist himself devolves the duty not only of applying his instrumental arts, but also of sifting symptoms and signs with great care, especially when these are erratic and scant. Not infrequently he is himself derelict in the attention he is inclined to give to indications that appear to be slight and inconsequential but that, in some instances, are actually vital leading clues.

In the case of the patient who offers no symptomatology at all, it must be confessed that the lesson is difficult, or even impossible, of practical application. It is interesting and instructive to know that such a condition may exist; it is quite a different matter to know what to do about it. A diagnostician, however acute, cannot exert his skill upon a patient who, unconscious of illness, never consults him. Perhaps the most that can be said here, and this hesitatingly because of its somewhat drastic tone, is that any routine medical survey, even in a patient symptom-free in this direction, should include a graphic exhibit of the urinary system. Intravenous urography now makes it usually possible to obtain such an exhibit without the disagreeable instrumentation previously necessary. The one inescapable objection is the item of expense. In some instances this will prove prohibitive. In others the burden will be carried by the free clinics. In still others the patient with some means at his disposal will wisely spend these dollars for the assurance that he does not fall within the narrow but existent and always pathetic group of bearers of renal disease, silent and yet dangerous or even deadly in import.

* Presented February 23, 1938.

The Treatment of Rare Forms of Leukemia.—Ever since the original description of leukemia from postmortem findings by Bennet and Virchow in 1845 and its clinical recognition by Vogel in 1851, a satisfactory method of treating the disease has been sought. The exact etiology is still unknown, although we do know that certain of the lower animals are susceptible and in man the disorder frequently follows malaria or a severe pyogenic infection. Without any clue to the etiology treatment has been empirical and directed toward alleviation of the distressing symptoms. Before the advent of irradiation many remedies were tried. . . .

Following the elaboration of new methods of staining blood cells and the greater precision of differential counts of the blood, leukemia was divided into myeloid and lymphatic forms, and in both of these types there were acute and chronic stages. Practically all leukemias were classified in these four groups. To this day no form of treatment, even palliative, has been found for the acute forms of leukemia which run the course of a fulminating, overwhelming infection with rapidly fatal outcome. . . .

. . . If the incidence of ordinary leukemia is one or two to every thousand general hospital admissions, at present only one or two of these borderline types are found in every hundred cases of leukemia. . . .

Summary and Conclusions—The hematologists have succeeded in isolating a new and rare form of leukemia, which we feel may not be so unusual, and with better understanding of the condition, may be more often recognized. The diagnosis depends mainly on the ability to recognize the immature cells in the blood picture.

In the differential diagnosis many diseases have to be ruled out which bear several points of similarity. Among these are aplastic anemia, purpura hemorrhagica, agranulocytosis, Banti's syndrome and hemolytic jaundice. The differential diagnosis is most important as in these conditions irradiation is not only contraindicated but may prove decidedly injurious.

In the treatment of these rare types of leukemia, splenectomy has been tried in the past but has not helped the condition. Roentgen therapy also has been used and often found too drastic because as a rule it covers too large a portal and causes some injury to the blood-forming tissues. The best therapeutic agent has been found to be cautious limited radium treatment which is well controlled by examinations of the blood. This has proved of decided value in producing effectual palliation.

Abstract of article by R. E. Fricke, M.D., and C. H. Watkins, M.D., *Proceedings of the Staff Meetings of the Mayo Clinic, March 30, 1938, p. 193.*

MEDICAL ANNALS

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POSTGRADUATE MEDICAL ASSEMBLIES

Organized medicine, to an extent that even transcends the learned professions of law, engineering and education, is sincerely concerned with the development of knowledge and particularly with the transmission of the consequent new developments to fellow-members. The American Medical Association and the State societies may be attacked by certain legislators, who would seek a bureaucratic form of medical practice with plums awaiting their faithful constituency, on charges involving such hackneyed and vague terms as "Inadequate Medical Care" and "Lack of Medical Freedom," or who, even for expediency, may make joint cause with the antivivisectionists; but no one in the "Endowed Foundations," the legislature, or without, can successfully charge that medical associations are not primarily interested in medical science and its propagation.

A free, relatively untrammeled profession gives generously to research, operates laboratories of investigation, and establishes and maintains standards of elementary medical education. Postgraduate courses in modern methods of diagnosis, and treatment that last from a day to a week, with nominal or no fees, for the education of the doctor, are given frequently throughout the year by constituent societies of the American Medical Association. In a profession free from the restraints that government subsidies connote, free from the implications of being mere cogs in a complex governmental machine, medical thought and research are dynamic virile things as contrasted to the static state of development of knowledge in countries with a profession and a public less fortunate.

In recent days the Washington public has been divided in controversy concerning a quasi-governmental coöperative scheme for medical care. Beyond doubt entirely too many words have been spoken by the local profession, both within and without its own walls, in its desire to correct a public wrong. However, in the newspaper battle engaged in vociferously by opponents of the Society's views not one statement has been uttered by the protagonists for "coöperative medicine" that would have the force to convince anyone that the doctors accepting employment therein have done so with a view to enlarging the general fund of medical knowledge, nor is there any marked altruism exhibited in their efforts for the individual contributing the $3.30 monthly premium. A newly accepted physician in the Group Health Association scheme was quoted in the newspapers as saying in effect, "in private practice one could never know whether he would collect $2.00 or $200.00 per month"; it was evident from the article quoted that in joining up "his own security was assured."

The Medical Society of the District of Columbia this month has completed two days of papers, scientific cinematographic presentations and numerous exhibits, presenting a well-rounded, well-conceived course of instruction, open not only to its own members but to physicians and students outside of its folds and also to residents beyond the boundaries of the District of Columbia. No fees of any kind were charged. Some 562 were registered, 57 of whom were from the States. All of this was done on the free initiative of members of the Medical Society of the District of Columbia without contribution directly or indirectly from the huge sums ready for expenditures by the Home Owners' Loan Corporation and other governmental alphabetical agencies. Recently Washington has received a visit from a doctor who came to our city from afar to attend a rally in a Government building auditorium for more and greater "coöperative medicine." He freely admits in his speech, according to a press account, that The Journal of the American Medical Association is the best in the world. Does government subsidy or "coöperative corporate practice" tend to create this, or is it rather an untrammeled profession?

May our profession remain free to progress and be allowed to continue toward its self-maintained objective of increasing the fund of knowledge to the end that the public of the United States of America will be better served.

TRANSACTIONS OF THE SOCIETY

Stated Meeting, May 11, 1938

Officers and Committee Members elected for terms as indicated:

To serve from July 1, 1938, to June 30, 1939:

William J. Mallory, *President*
John Hugh Lyons, *President-elect*
William T. Gill, Jr., *First Vice President*
David Davis, *Second Vice President*
Coursen B. Conklin, *Secretary-Treasurer*

To serve from July 1, 1938, on the Executive Committee:

Francis X. McGovern (*4-year term*)
Thomas E. Neill (*3-year term*)
Don Johnson (*2-year term*)
Raymond T. Holden (*1-year term*)

To serve from July 1, 1938, to June 30, 1940:

Members, Compensation, Contract and Industrial Medicine Committee—

Edgar M. McPeak
Eugene A. Taylor

Membership

The following were duly elected to membership:

Active Members

Herbert Abramson, 4500 Sixteenth Street, N. W.
Paul Frederick Dickens, 1835 Eye Street, N. W.
John Frank Dominick, 3715 S Street, N. W.
John Phelps Hand, Jr., Sibley Memorial Hospital
William Joseph P. Howard, 915 K Street, N. E.
Maxwell Hurston, 418 Florida Avenue, N. E.
Morton Selwyn Kaufman, 1835 Eye Street, N. W.
Thomas Francis Keliher, 3142 Que Street, N. W.
Philip Litvin, 3433 Fourteenth Street, N. W.
Floyd Sterling Rogers, Jr., 1835 Eye Street, N. W.
Eugene E. Willison, 1816 R Street, N. W.

Associate Members

David Stanford Clayman, 3628 Thirty-fourth Street, Mount Rainier, Md.
Francis John Tartaglino, Saint Elizabeths Hospital

Applicants for membership to be voted on in November, 1938:

For Active Membership

Ralph Mearle Caulk, University of Kansas—1934
James Clement Cawood, Georgetown University—1936
Louis Anthony Cornet, Georgetown University—1921
William Dyke, Georgetown University—1929
Cecil Leban Fusfeld, George Washington University—1935
Clayton Hawfield, George Washington University—1928
Lois Dean Hubbard, Johns Hopkins University—1919
Richard Stephen Hulburt, Georgetown University—1931
Brayton Omar Myers, George Washington University—1928
Joseph Louis Nocentini, Temple University—1935
John A. O'Donoghue, Georgetown University—1934
Joseph Lawn Thompson, Jr., George Washington University—1936
Stephen F. Verges, Georgetown University—1934

For Associate Membership

Henry Rolf Brown, University of City of New York—1889
William Green Cushard, George Washington University—1927
Roscoe Willis Hall, Johns Hopkins University—1912
Arthur Alfred Nelson, University of Minnesota—1935
Howard James Newton, D.D.S., Georgetown University—1926
Samuel A. Silk, Temple University—1910
Alexander Tish, New York University—1922
Sigmund Weiss, University of Colorado—1937

Recent changes in membership status:

Active to Associate

James Henry Gillen
Manly B. Root

Resigned

Active Members—Franklin H. Maury
John P. Gunion

ACTIVITIES OF SECTIONS

Section on Neurology and Psychiatry

The result of election of officers for the year 1938–1939 is as follows:

Elmer Klein, *Chairman*
James Lewald, *Vice Chairman*
James W. Watts, *Secretary-Treasurer*
Executive Committee Members:
John P. H. Murphy
Roger S. Cohen
Paul J. Ewerhardt

Section on Ophthalmology and Otolaryngology

The following officers were elected for the year 1938–1939:

Richard A. Kearny, *Chairman*
Jeter C. Bradley, *Vice Chairman*
John H. Trinder, *Treasurer*
Elmer R. Shepherd, *Secretary*

TRANSACTIONS OF THE WASHINGTON SOCIETY OF PATHOLOGISTS

The meeting of the Washington Society of Pathologists was called to order at 1:30 P.M., Saturday, April 2, 1938, in the Army Medical Museum by the Vice President, Dr. J. W. Miller. There were present 16 members and 2 guests.

Presentation of Cases

Dr. A. A. Nelson presented slides from the case of a white brick mason, 33 years of age, who had been struck on the side of the neck with a "black jack," May 18, 1937. The following day a slight swelling and discoloration had developed. The area remained painful for about 1 month, and as the pain and tenderness decreased there was an increase in the size of the tumor mass. It was always firm, and the patient was able to move his neck without causing pain. There was no other lymphadenopathy. The patient had always been in good health, and a complete physical examination was negative (March, 1938) except for the scar over the right posterior triangle of the neck where the tumor had been excised. The tumor, removed March 2, 1938, consisted grossly of two pieces of encapsulated tissue about the size of a small thyroid, which had a soft, pale cut surface. No attachment could be identified. The blood picture and Wassermann test were negative. The tumor was not deep or near the carotid artery.

In the discussion it was noted that there was abundant fibrous tissue with long, spindly cells having curving nuclei to suggest neurogenic origin; the myxomatous type of thickening between the cells also was consonant with neurinoma. But there was much inflammation. The picture of a large number of eosinophiles, fibrous tissue, some large cells, many lymphocytes in and around the capsule to suggest lymph node, and Dorothy-Reed cells all suggested Hodgkin's disease.

Lieutenant Colonel J. E. Ash presented tissue removed from the skin. There were several lesions scattered about over the body, some on the face and some on the arms. In the sections the characteristic features were hyperkeratosis, acanthosis, practically no rete pegs, and the presence of many so-called Bowen's-type cells. Associated was a marked inflammatory reaction in the superficial dermis.

In the discussion the lesion itself was not considered malignant, although it was called intra-epidermal carcinoma. Sometimes true carcinoma does appear.

Dr. Walter Freeman presented microscopic slides from the case of a colored woman, aged 19 years, whose chief complaints were frontal headaches of 2 months' duration, and weakness and dizziness following an attack of lobar pneumonia. She began to fail in October, the process being considered secondary to drugs or antiluetic therapy. She became increasingly dizzy, however, and complained of feeling as if a train were running through her head. Severe headaches did not yield to sedatives. Vomiting, increased weakness, loss of 15 pounds, swelling, pain and tenderness in the joints, and numbness of the hands and feet occurred. Examination showed a seriously sick, colored woman, with temperature of 101°F., pulse rate of 140, and blood pressure of 110/60; bilateral choked discs of 3 diopters, with hemorrhages on the right side; spinal fluid bloody and under increased pressure with cell count 126 (42 per cent polys and 58 per cent lymphocytes), and a trace of sugar. On November 15, two days after admission, there was a positive Babinski sign on the right, fresh hemorrhages in the right disc, and pain and particularly tenderness of the left frontal region. At one time there was stiffness of the neck, but this disappeared.

On account of the localizing signs, it was suggested that an abscess was forming in the left frontal lobe. Operation was postponed on account of the meningeal reaction. Sulfanilamide therapy was therefore instituted with daily spinal punctures. Four transfusions were given, and in a week after the administration of 12 grams of sulfanilamide the physical signs were much less and the cell count in the spinal fluid was down to 17. Subacute bacterial endocarditis was suggested at this time. A blood culture, however, was negative.

December 10, the temperature was still rising daily to about 103°F., with a positive Kernig sign on each side. The spinal fluid remained clear, the cell count now being 7, and the white blood cell count was 11,300, the hemoglobin 45 per cent, and the red blood cells, 3,450,000. Sulfanilamide was continued. A ventriculogram was performed on December 17. Through the left frontal region clear fluid was obtained, and on needling the frontal lobe no abscess was encountered. The ventricles were not satisfactorily filled with air, and a second examination was made with puncture of the right frontal region and then of the right occipital region, clear fluid being obtained. About 5 days after the last attempt the patient went into coma rather suddenly and died in a few hours. The autopsy revealed mitral heart disease with a soft necrotic vegetation of large size. There were infarcts in the spleen and kidneys. Gross examination of the brain revealed no infiltration or thickening of the meninges, no dilatation or inflammation of the ventricular lining, and no gross focal lesions, in either the cortex or the white matter of the brain.

Pathologic examination of the brain revealed the following:

Cerebral Cortex. The meninges were somewhat thickened and were infiltrated to a varying degree in various places by cells of the lymphoid series, usually in the depths of the fissures and around the mouths of the efferent veins. At times there was a little hemosiderin pigmentation of phagocytic cells, but there were no polymorphonuclear leukocytes. The cortex itself was of fairly normal thickness, and its architecture was relatively little disturbed, although it appeared somewhat more cellular than usual and this cellularity was found to be due to a diffuse proliferation of the microglia. The ganglion cells for the most part were more or less swollen with rounding of the contours, and they showed disappearance of the mineral granules with fairly dark staining either of the cytoplasm or of the nucleus. Some of the cells appeared to be entirely washed out. There was little reaction on the part of the oligodendroglia in most places and the astrocytes seemed to be normal. On the other hand, in numerous places there were foci of cellular proliferation, chiefly of microglia character, usually rounded and often surrounding a small vessel. The vessel itself often had a number of lymphocytes and occasionally some polymorphonuclear leukocytes in the vascular sheath and some phagocytes laden with what appeared to be blood pigment. Some of these foci were very minute and could only be picked up under the higher powers of the microscope. Others were plainly visible with the lower powers, but scarcely with the naked eye. On the other hand, there were certain areas of the cortex where there was rather widespread devastation of the tissue surrounded by a pale-staining ring of irregular character that suggested the presence of early infarction or of toxic degeneration, localized through the neighborhood of the nutrient arteries. These foci were scattered here and there without any definite arrangement, and some of them were even seen in the white matter below the cortex.

Basal Ganglia. The architecture of the section of basal ganglia taken showed a good deal of disturbance in the putamen, owing to the presence of a larger infarct, which was not yet really broken down, except in the immediate center, although there was proliferation and infiltration of cells in the neighborhood to a fairly extensive degree. There was new formation of blood vessels with capillary proliferation and endarteritis or endophlebitis, making thick walls for the vessels, with numerous swollen endothelial cells comprising this wall. Elsewhere in the basal ganglia there were small foci similar to those found in the cortex and occasionally probably in the vicinity of one of these foci there was fairly definite perivascular round-cell infiltration. The ependyma appeared fairly normal.

Midbrain. There were small foci of embolic nature here and there in the midbrain, chiefly in the tectum but also in the tegmentum and around the sylvian aqueduct. These were not very numerous or large.

Cerebellum. There was practically nothing unusual in the cerebellum, except the infiltration of the meninges by lymphocytes.

Pons. A few small foci were found in the pontile nuclei, similar to those elsewhere, and there was generalized proliferation of the microglia which had assumed the elongated rod form. There was no demyelinization anywhere, except in the neighborhood of a small hemorrhage probably caused by the passage of the ventricular needle in the basal ganglia.

Medulla. A few small foci were found here and there, chiefly in the olivary bodies, with proliferation of the microglia around a blood vessel and sometimes a small area of necrosis in the center with lymphocytic infiltration, but only occasionally was a leukocyte encountered.

In the discussion, the condition in the brain was considered apparently one of true encephalitis of embolic character attested by the focal inflammatory nodules and the larger area of infarct in the basal ganglia. This appearance must have been due to transportation of infected material from the mitral valve in small quantities and containing organisms of very low virulence, since there was practically no leukocytic reaction at any point. The meningeal involvement evidently came from the embolic foci in the brain, the cells and other material being swept outward through the cortex into the subarachnoid spaces by the course of the lymph stream, and the focal symptoms may have had their genesis from the larger infarct of the basal ganglia. The heart valves in this case were very soft. There were infarcts in the heart, spleen and kidneys. Also, in the discussion, the questions of whether these foci were of infectious nature or merely infarctions, and whether they were the so-called rheumatic encephalitis were considered.

Dr. J. W. Lindsay presented slides from the case of a man, 45 years of age, who, some years after typhoid fever, had developed abdominal distress and indigestion. Operation was advised and marked thickening of the wall of the ileum found, resulting in partial obstruction. A mass of the ileum, about 3 inches long, was removed. It was considered to represent an inflammatory process at the time of operation, but sections showed an argentaffine cell tumor infiltrating practically the entire wall.

Discussion concerned the prognosis and the possibility of the lesion becoming malignant, emphasis being placed on the fact that such tumors when found in the appendix are less likely to prove to be malignant than when present in other parts of the bowel. The appendix in this instance contained no lesion similar to that in the ileum.

Dr. H. H. Leffler presented one slide from the case of a 54-year-old woman whose left breast had been removed 2 years before. About 1 month before pleurisy had developed and 2000 cc. of fluid containing cells was drawn off. Some of the cells were quite large and some small. Malignant cells were not identified.

Dr. George Tolstoi presented the case of a white man about 65 years of age. Approximately 1 year before, he had developed mental deterioration characterized by disorientation, incoherent speech and later aphasia. He was quite weak and ran a progressively downward course which terminated in coma and death. Spinal-fluid examination was entirely negative, and Wassermann and Kahn tests were likewise negative. At necropsy there was discovered a soft, gray, well-defined tumor in the left frontal lobe. The surrounding area of the brain was quite soft and showed evidence of degeneration. Nearby was located a second tumor showing similar gross characteristics. The sections showed a heterogenous growth of cells with areas of necrosis surrounded by palisades, a typical spongioblastoma multiforme.

Dr. Henry Wollenweber presented a case of cirrhosis of the liver with an unusual amount of necrosis and an enlarged spleen weighing 900 Gm. from a white man, aged 50 years, the point of special interest being an acute necrosis in the centers of many of the nodules, probably due to pneumonia which had occurred within 48 hours prior to death.

The meeting adjourned at 3:15 P.M.

NEWS AND PERSONALS

The American Medical Association meets in San Francisco, June 13–17, 1938. Make your reservations for hotel with Dr. F. C. Warnshuis, Suite 2004, 450 Sutter Street, San Francisco, California. Dr. Henry C. Macatee is our delegate to the House of Delegates, which convenes in the Empire Room of the Hotel Sir Francis Drake. It may be noted that Dr. William P. Herbst is Secretary of the Section on Urology; Dr. Kate B. Karpeles will preside at the Board of Directors meeting of the American Medical Women's Association. Dr. Margaret M. Nicholson will open the discussion on paper "Allergy of Childhood, Prophylaxis, Early Diagnosis and Treatment," by W. Ambrose McGee of Richmond, Va.; Dr. William P. Herbst will open the discussion of paper "Diagnosis and Treatment of Urinary Infections," by Henry F. Helmholz, of Rochester, Minn.; and Dr. Walter Freeman will be heard in the discussion of the paper "Horse Serum Neuritis," by A. E. Bennett of Omaha, Nebraska, and also the paper, "Treatment of Tabes Dorsalis: Observations on Nine Hundred Patients," by Drs. Paul A. O'Leary of Rochester, Minn.; Joseph Earle Moore of Baltimore, Md.; John H. Stokes of Philadelphia, Pa.; Udo J. Wile of Ann Arbor, Mich.; and Thomas Parran, R. A. Vonderlehr and Lida J. Usilton, of Washington, D. C.

The American Medical Golfing Association cordially invites Fellows to play in the Twenty-fourth Tournament to be held at the San Francisco Golf and Country Club on June 13. *Cost:* $7.00 covers greens fee, dinner, tournament fee, refreshments, exceptional entertainment, and prizes. (New Fellows pay an additional enrollment fee of $3.00.) *Prizes:* Fifty beautiful trophies and prizes—for experts, dubs, beginners—in Nine Events, both gross and net. Only Active Fellows of the AMGA may compete for prizes. Address any communications to Bill Burns, Executive Secretary, Lansing, Michigan.

Many Physicians and their Families will "See America" en route to the convention in San Francisco. It is good to learn from the American Express Company, Official Transportation Agents for the Convention tours, that they have already received a very excellent response from physicians and their families, which indicates that the San Francisco Convention will be a great success. It is recommended that members of this Society who intend to participate in the Convention apply at an early date to the American Express for their tour reservations, as this will assure them of receiving the type of pullman accommodations they desire.

This is the first time that the physicians have been offered the facilities of deluxe special trains visiting the scenic attractions of the west, at a very nominal all-expense cost from your home city. Traversing a route that contains many wonders, one's particular preferences are bound to be among them. For instance, the Indian Pueblo District with its remnants of an ancient civilization long vanished from this continent. The Grand Canyon offers its grandeur of scenic attractions. Southern California, its glowing, sun-filled cities and orange empires, Spanish Missions, Catalina Island and the Pacific rolling up to the edge of white sands. That is the route to San Francisco and the Convention.

Returning, there is a choice of two routes. One includes the charming cities of America's Northwest: Portland, Seattle, Victoria, Vancouver and the majestic Canadian Rockies and its resorts. Route Two winds through Yellowstone National Park and its world-famous geyser region, through Salt Lake City, and the scenic beauties of the Royal Gorge, Colorado Springs and the mile-high city, Denver.

That is but a rough outline of the itineraries offered to physicians planning to attend the Convention this June. These special train tours are restricted to physicians, their friends and families, and have been made possible through the united interest and support of 25 state medical societies which makes it possible to offer the tours on an economical, all-expense basis. This is an ideal opportunity to enjoy a wonderful vacation with your family and in the company of friends and colleagues in the Society and in other state Societies.

The Medical Society of Saint Elizabeths Hospital held its First Annual Dinner on April 14, 1938, at the Kennedy-Warren Hotel. Dr. Winfred Overholser, recently appointed Superintendent of Saint Elizabeths Hospital, and Mrs. Overholser, were the guests of honor. Dr. Cloyd Heck Marvin, President of George Washington University, was the invited speaker. It was announced by Dr. Overholser, in a tribute to his predecessor, that a painted portrait of Dr. William Alanson White, now on view at the Hospital, would probably soon be purchased and presented by several of his admirers to the Hospital.

The Medical Society of Saint Elizabeths Hospital was organized last year as an alumni society of the institution and is composed of present and former members of the medical staff of the hospital. Correspondence is invited from physicians who have previously served at the hospital and who are interested in learning more about the aims of the Society. Letters should be addressed to Dr. Jay L. Hoffman, Secretary, Saint Elizabeths Hospital, Washington, D. C.

American Association of Industrial Physicians and Surgeons will hold concurrently with the Midwest Conference on Occupational Diseases, at the Palmer House, Chicago, June 6–9, 1938, its twenty-third annual meeting. The sessions will be open to any practicing physician in accordance with the educational program of the Association to spread the propaganda of preventive medicine and absenteeism of employees. For an advance copy of the program or for information on exhibits, address Mr. A. G. Park, 540 North Michigan Avenue, Chicago, Illinois.

Dr. Harry F. Davies read a paper, "The Differential Diagnosis Between Maxillary Sinusitis and Diseased Maxillary Teeth," and **Dr. Joel N. Novick** presented a paper, "Extra-oral Method of Regional Anesthesia in the Superior Maxilla," at the meeting of the District of Columbia Dental Society on April 26.

Dr. James A. Cahill, Jr., read a paper, "Surgery of the Gallbladder and Biliary Ducts," at the meeting of the Northumberland County Medical Society in Sunbury, Penna., Thursday, May 5.

REPRINTS RECEIVED

The following reprints have recently been received for which due acknowledgment is made:

"Significance of Retinal Fatigue in the Study of General and Nervous Diseases." Sterling Bockoven, M.D., and Blanche Wilcox, Ph.D., Archives of Ophthalmology, June, 1937.

"Diagnosis and Treatment of the Phorias." William Thornwall Davis, M.D., American Journal of Ophthalmology, February, 1938.

"Leukemias of Infancy and Early Childhood." Harry A. Spigel, M.D., Archives of Pediatrics, January, 1938.

Maurice Crowther Hall, Ph.D., D.V.M., D.Sc.

(1881-1938)

Dr. Maurice Crowther Hall, an Associate Member of the Medical Society of the District of Columbia, who had gained a high reputation as an outstanding scientist, died on May 1, 1938, at Walter Reed General Hospital. Dr. Hall's life work in medical zoology has rendered much aid in combating such scourges as hookworm and trichinae. His monumental work with the latter has brought general attention to the high rate of infestation in this country. Among his scientific society memberships may be noted: American Society of Zoology, American Veterinary Medicine Association, American Society of Tropical Medicine, American Academy of Tropical Medicine, American Public Health Association, Washington Academy of Sciences. Dr. Hall had attained the position of Chief of the Division of Zoology, National Institute of Health, United States Public Health Service.

Dr. Hall is survived by his widow, Mrs. Lola Davis Hall, and three daughters, Mrs. Marion Holland, Mrs. Margaret McCormick, and Miss Lois Hall, all of Washington.

Honorary pallbearers at his funeral included: Captain Charles S. Butler, U. S. N., Drs. Charles Wardell Stiles, Paul Bartsch, Earl B. McKinley, Cloyd Heck Marvin and L. O. Howard. The interment was in Arlington National Cemetery.

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SULFANILAMIDE THERAPY FROM A PHARMACOLOGIC VIEWPOINT*

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Sulfanilamide (para-amino-benzene sulfonamide) was developed as an extension of the studies reported by Domagk[1] of Germany in February, 1935, with prontosil, an azo dye, which was found by him to have marked value against experimental infections in mice with certain hemolytic streptococci.

This work of Domagk with prontosil on hemolytic streptococci was promptly confirmed by Levaditi[2] and others in France; and in November of that year Trefouel, Trefouel, Nitti, and Bovet[3] of the Pasteur Institute, advancing the hypothesis that prontosil was broken down to sulfanilamide in the body, conducted animal experiments with the latter upon mice and rabbits infected with a virulent strain of hemolytic streptococci and found that its effects against these organisms were wholly comparable to those of prontosil.

Still later, Colebrook, Buttle, and O'Meara[4] of London found that prontosil had no action on hemolytic streptococci in vitro, whereas sulfanilamide had a direct inhibitory or bactericidal action, thus supporting the hypothesis of Trefouel and others.

Since then sulfanilamide has been the subject of much laboratory and clinical study throughout the civilized world and it has largely supplanted the original azo dyes in the clinic.

CHEMICAL NATURE OF SULFANILAMIDE

Sulfanilamide is a white crystalline powder possessing a slightly bitter taste which disappears promptly leaving a somewhat more lingering sweetish aftertaste. It is relatively insoluble in water, a little less than 1 part in 100 passing into solution at a room temperature of 22°C. For parenteral use, therefore, it is customary and advisable to employ an 0.8 per cent aqueous solution. Such a solution may be sterilized and is relatively stable. The aqueous solution is colorless and neutral to litmus.

No satisfactory solvent has as yet been found which enables one to give it clinically in concentrated form.

Sulfanilamide has been approved by the Council on Pharmacy and Chemistry of the American Medical Association as a product possessing clinical value, and 9 brands have already been admitted to New and Nonofficial Remedies. There is no United States patent on the product since the compound was described by Gelmo[5] in the chemical literature almost 30 years ago. It is already distributed by at least 200 domestic drug manufacturers, many of whom have agreed to call it sulfanilamide. The firms that market it under a trade name possess a monopoly on the name only.

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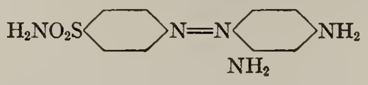
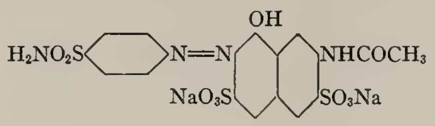
* Read at the Sixth Annual Postgraduate Clinic, George Washington University, February 19, 1938.

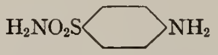
A clearer understanding of its relationship to prontosil and prontosil soluble may be obtained by referring to their structural formulae which appear below.



The Original Prontosil of Domagk



Prontosil Soluble of Domagk



Sulfanilamide of Gelmo

Upon inspection of the upper two "prontosil" compounds, one finds that the benezene ring on the left of the double nitrogen linkage contains the same substituent, each of which is in the para position. The sulfonated ring of these azo compounds is therefore essentially the same as sulfanilamide.

The original prontosil of Domagk[1] was first synthesized by Mietzsch and Klarer in 1932 and became known as prontosil, prontosil rubrum, prontosil flavum. It is a dye stuff which forms an aqueous yellowish-orange solution and is relatively insoluble (0.25 per cent) in water at room temperature.

Prontosil soluble is also a synthetic product of Mietzsch and Klarer, which Domagk named prontosil soluble because of its greater solubility in water (about 4 per cent). It also forms a red solution in water.

In the United States the term prontosil usually refers to prontosil soluble, since practically none of the original prontosil is to be found on the domestic market. Occasionally one also finds references to white prontosil, by which is meant the sulfanilamide of Gelmo.[5] Both of the azo compounds, prontosil and prontosil soluble of Domagk, are patented.

Absorption, Distribution and Excretion

Sulfanilamide is readily and completely absorbed by the gastro-intestinal tract of the human, and circulates in the blood and other tissues almost wholly as such.[6] Marshall and his associates[6] found that in the human subject after a single dose of about 60 grains the maximum concentration in the blood would be reached in from 1 to 4 hours, the average being about 2 hours.

In patients without kidney damage there was practically none in the blood after 24 hours. Patients that received about 60 grains a day (in divided doses) required about 2 or 3 days to establish equilibrium between the amount ingested and the amount excreted. Moreover, when such equilibrium was established it required a similar length of time to excrete it from the body if the kidneys were normal. To maintain equilibrium, a blood concentration of from 11 to 16 mg. per cent was required.

After its absorption it appears in all the body fluids and tissues.[7] It seems to be present in a little higher concentration in the plasma than in whole blood; in the saliva, pancreatic juice and cerebrospinal fluid its concentration is a little lower than that existing in the blood.

Of the tissues of the dog examined by Marshall,[7] the highest concentration appeared in the blood, skeletal muscle, heart muscle, liver, lung, and spleen, the concentration being about the same order of magnitude for all these organs. A much lower concentration was found in the fat and bone, whereas the brain and skin possessed a content only slightly lower than that of the blood.

It is thus seen that it is a readily diffusible substance, and resembles urea in its equal distribution throughout the body.

Sulfanilamide is almost wholly excreted by the kidney, the normal kidney filtering it off within 24 hours.[6] The damaged kidney will hold it back, and cumulation occurs. In such instances the concentration in the blood may rise as high as 20 mg. per cent. Long[8] states that when this figure has been reached the drug should be discontinued or the dose reduced.

Fuller[9] and Marshall[10] found that in man it is excreted partly as a conjugated form, the latter being mainly if not entirely the acetylated derivative. After its administration to man, a 24-hour sample of urine (980 cc.) contained 1.2

Gm. of the free and 1.25 Gm. of the conjugated derivative.[10] Only the free form possesses therapeutic activity.[6]

Parenthetically, it should be stated that the conjugated form is somewhat more toxic than the free form.[11]

It is interesting to note that the concentration in the blood does not mount more quickly or attain a higher level with subcutaneous than with oral administration.[6]

Pharmacologic Activity and Laboratory Toxicity

Sulfanilamide, like prontosil, acts as a relatively indifferent substance on both body functions and structures, particularly after single doses. Unlike the prontosils it is not corrosive when given subcutaneously.

Hawking,[12] could obtain no effects on the blood pressure of anesthetized cats and dogs from as much as 0.17 gram per kilo given intravenously. Likewise, a 1 to 1000 solution was completely without effect on the isolated rabbit intestine, guinea pig uterus, and frog's heart. Intraperitoneal injections of the base to rabbits caused no apparent irritation.

Marshall[11] gave large doses of sulfanilamide, about 1 gram per kilo, to 2 dogs daily by mouth for about a week and could find no consistent change in the red or white blood cell count or in the differential white blood cell count. In both animals there was a slight rise in hemoglobin followed by a slight fall.

He further examined the urine of dogs treated with sulfanilamide for protein and sugar and found none after single large doses or repeated smaller doses throughout a period of several months. A temporary decrease in renal function was observed only after giving large doses of the drug, but no permanent kidney damage remained. Acidosis occurs in dogs from the use of large single doses. This seems to be due, in these animals, to alkali excretion, in the form of the bicarbonates. It is possible that the bicarbonate excretion is due to the sulfanilamide interfering with the reabsorption of the bicarbonates in the tubules.

Determination of the carbon dioxide content of the plasma showed a decrease in the plasma carbon dioxide coincident with the decrease in the acidity of the urine, and so it seems likely that the acidosis is due to alkali loss by way of the kidney.

The toxicity has been determined by a number of individuals for mice, rabbits, cats and dogs, and it has been shown to possess little toxicity either after single large doses or repeated small doses. For example, of 7 dogs given 1 gram per kilo orally by Marshall[11] (i.e., a 10-kilo or 22-pound dog received 10 grams or 150 grains), 1 animal showed no symptoms, another only a slight ataxia, and the remaining 5 exhibited rather marked symptoms with full recovery after 10 to 12 hours. These symptoms consisted of salivation, vomiting, diarrhea, hyperpnea, excitement, muscular weakness, ataxia, diminished sensibilty and spastic rigidity of the limbs. Placing reactions were absent, and the animals appeared to be blind. In many respects the early symptoms resemble those caused by ethyl alcohol, the later symptoms being similar to those manifested by an animal with its cortex removed.

Young rats fed daily on sulfanilamide in amounts ranging from 0.16 to 0.35 gram (2.4 to 5.2 grains) grew as well as the controls.

Unlike the findings in the human, neither methemoglobin nor sulfhemoglobin have been found to occur in the animals after its use.

Hageman[13] administered sulfanilamide to mice and found that it exerted no toxic action on the liver or kidney.

Hawking,[12] using rabbits and cats, could find in acute poisoning no change in the liver, kidneys and other viscera, but in those animals which died from the drug, chromatolysis was observed in the neurones of the anterior columns of the spinal cord, and in some of the nerve cells of the cortex and midbrain. Experimentally therefore, in acute poisoning, the stress falls upon the central nervous system.

Toxicity in Man

The toxicity for man seems to be greater than has thus far been reported for animals. The symptoms that have just been described for dogs after administration of 1 gram per kilo orally are coincident with rather high blood concentrations of sulfanilamide, 40 mg. per cent being required to produce symptoms; in man this concentration is never reached in the therapeutic use of the drug.

Four fatalities after sulfanilamide have already been reported, death in each case being caused by its effect on the hematopoietic system resulting in "malignant" agranulocytosis. The case reported by Young[14] well illustrates the course of this side action in such instances.

> A male, aged 53 years, who was suffering from acute rheumatism with joint pains and pyrexia, failed to respond to salicylates and was given sulfanilamide, 3 grams daily for 18 days. The day before treatment his hemoglobin was 90, the leukocytes numbered 12,000, being distributed as follows: 6,600 polymorphonuclears; 4,344 lymphocytes; 660 monocytes; 396 eosinophils; no basophils or myelocytes. On the day before the drug was stopped the leukocytes had dropped to 7,800, of which 5,694 were polymorphonuclears; 1,755 lymphocytes; 351 monocytes; no eosinophils, basophils or myelocytes. The day before death (5 days after discontinuing the drug) the leukocytes had dropped to 1,800, all of which were lymphocytes. A hemoglobin determination made following death revealed 82 per cent with 4,290,000 red blood cells. At necropsy the bone marrow showed complete myeloid aplasia. Spectroscopic examination of the blood following death was negative for sulfhemoglobin.

The other 3 cases, which are reported by Model,[15] Schwartz,[16] and Berg,[17] show essentially the same effect on the leukocytes as reported by Young, together with a reduction in red cells and in the hemoglobin. The total amount administered by Model was 3 grams daily for 18 days; by Schwartz, 5 grams daily for 2 days, 3.75 grams daily for 3 days, and 2 grams daily for 13 days; by Berg, a total of 38 grams over a period of 4 weeks, with 2 interruptions in treatment.

Harvey and Janeway[18] observed 3 cases of severe hemolytic anemia within 3 weeks, 2 occurring during the treatment of streptococcal sore throat and one during meningococcal meningitis. All patients recovered after medication was stopped and following transfusions of citrated blood.

Jennings and Southwell-Sander[19] reported 3 cases which manifested some degree of anemia together with evidence of abnormal bone marrow activity; also 1 case of complete agranulocytosis, during sulfanilamide therapy.

Brown and Bannick[20] of the Mayo Clinic have had no fatalities, nor have they noted either renal or hepatic damage. They have listed the toxic effects which have been noted in man, under three heads: mild, moderate, and severe. The mild effects were general malaise, headache, anorexia, mild vertigo, tinnitus and nausea. Moderate effects included all of the mild effects and in addition cyanosis, methemoglobinemia or sulfhemoglobinemia, numbness, and tingling of the hands, face or feet, skin rash, abdominal pain, diarrhea, fever, acidosis and a toxemia resembling that of acute ethyl alcohol intoxication. Severe effects included both the mild and moderate effects, together with, leukopenia, jaundice, hemolytic crisis, rapid pulse, marked pyrexia, and collapse.

Bucy[21] observed toxic neuritis following sulfanilamide administration to a female aged 16 years suffering from chronic osteomyelitis. She had been receiving acetyl salicylic acid, phenobarbital and ferrous sulfate for a long time. Inasmuch as her hemoglobin and her red blood cell count were low before sulfanilamide administration she was given repeated blood transfusions, but she was little improved by them. About a week after the use of moderate doses of sulfanilamide (about 12 grams in 5 days) toxic optic neuritis developed. The drug was then discontinued and after about a month both vision and the appearance of the optic disks were found to be normal.

Hageman and Blake[22] observed a mild hepatitis in 1 case which showed a febrile reaction on the seventh day following continuous sulfanilamide therapy.

Myers[23] reported a case of severe exfoliative dermatitis accompanied by edema, purpura, fever, marked leukocytosis, marked acidosis and transient jaundice, in a patient who had taken 88.3 grams of sulfanilamide over a period of 28 days.

The rise in temperature is considerable and may reach 106°F. to 107°F.

Various explanations have been given to account for the cyanosis. It has been attributed to (a) methemoglobinemia, (b) sulfhemoglobinemia, and (c) unknown pigment in the blood and other tissues.

Paton and Eaton[24] reported that magnesium sulfate administered either simultaneously with, or within 2 or 3 days preceding sulfanilamide therapy gave rise in most persons to sulfhemoglobinemia. It formed very rapidly, even after small doses of the drug. Large doses such as 12 to 24 grams of sulfanilamide daily usually resulted in methemoglobinemia.

Archer and Discombe[25] believe that the sulfhemoglobinemia is produced by the sulfanilamide acting as a catalyst which makes it possible for the hydrogen sulfide absorbed by the intestine to combine with hemoglobin. They hold that in the normal intestine the rate is slow enough for protein products to be properly absorbed, and hence no intestinal putrefaction and little hydrogen sulfide is produced. When purgation results, either from the drug or otherwise, putrefaction occurs and there is produced hydrogen sulfide much in excess of that which occurs normally. The saline cathartics are particularly active in maintaining the contents of the colon in a semifluid state, thus aiding putrefaction and sulfide formation.

Discombe[26] noted sulfhemoglobinemia in 6 of 7 patients which received over 60 grains of sulfanilamide.

The patient free from sulfhemoglobinemia had received no magnesium sulfate, all others had, 5 internally and 1 as a dressing.

He states that while the cyanosis is spectacular and alarming, the condition is not dangerous unless the total hemoglobin falls below 30 per cent.

Marshall[27] examined the blood of 7 patients that were taking sulfanilamide, 6 of whom showed cyanosis after use of the drug. He found that the oxygen-carrying capacity of the blood was unaltered in some cases and only slightly reduced in others. Methemoglobin was found in traces in only 2 cases, one of which had also been receiving aspirin; the other had been receiving sulfanilamide for 7 months. He concluded from his examination that methemoglobinemia and sulfhemoglobinemia are probably not the main cause of the cyanosis, and intimated that the cause will probably be found to be some oxidation product within the tissues.

Bigler, Clifton and Werner[28] observed cyanosis in 7 out of 33 patients, and in every instance the hemoglobin was from 90 to 100 per cent before the cyanosis developed, when it would rise somewhat during the period of cyanosis. In none of the blood specimens taken during the period of cyanosis were they able to demonstrate methemoglobin or sulfhemoglobin with the spectroscope.

The mechanism of the rise in temperature is thought by Hageman and Blake[22] to be due to the sulfanilamide being changed, or changed and combined with the body cells so as to become antigenic. The fact that it may occur after the drug has been discontinued suggests that it is not the immediate concentration in the body at the time which causes the fever. However, attempts to demonstrate precipitins or sensitivity by patch and intradermal tests in the human have failed, as have also the efforts to passively sensitize and to produce anaphylaxis and skin hypersensitization in guinea pigs.

It has not been established how many of the symptoms of toxicity are due to the inherent toxicity of the drug and how many are due to idiosyncrasy. The nausea, dizziness, confusion, acidosis and cyanosis and perhaps the fever seem to be toxic manifestations of the drug, since they occur so regularly and become more severe when the dosage is increased. It is not unlikely that the skin rashes and blood changes, such as hemolytic anemia and agranulocytosis, are due to idiosyncrasy.

Skin eruptions are especially likely to occur in areas exposed to the sun.

CHEMOTHERAPEUTIC ACTIVITY

The suggestion made by Trefouel, Nitti and Bovet[3] of the Pasteur Institute that the activity of the prontosil of Domagk resided in the sulfanilamide fraction of the molecule led to a world-wide search for further knowledge concerning this fraction, as well as information as to its mode of action.

Following closely upon the experimental work of Trefouel and his staff in France, was the work of Colebrook[4] and others in England, also that of Long and Bliss,[29] and Rosenthal and his collaborators[30] in this country, who from their laboratory studies found sulfanilamide to be of value, not only against animal infections with hemolytic streptococci, but against other bacteria as well.

It was shown by Buttle, Gray and Stephenson[31] and confirmed by Proom[32] that sulfanilamide protected mice against experimentally induced meningococcal septicemia. This was added to by Rosenthal and Branham[30] in this country, who further found experimentally that the use of both the drug and the specific serum gave better results than drug therapy alone. Extending this line of investigation still further, Brown[33] found that 8 mg. of sulfanilamide was comparable in curative value to 0.1 cc. of a highly potent antimeningococcal serum. Like Rosenthal he noted that the use of drug and serum was better than either alone.

Buttle, Gray and Stephenson[31] could discover no protection against experimental infections with pneumococci or staphylococci, but Rosenthal[30] demonstrated experimentally that sulfanilamide was of some value against pneumococcus types 1, 2 and 3 infections in mice.

Buttle, Parish, McLeod and Stephenson[34] found that it protected mice against multiple lethal doses of typhoid and paratyphoid bacilli, but in no case were the experimental results as satisfactory as in hemolytic streptococcal and meningococcal infections.

Rich and Follis[35] have recently reported that it had a distinct inhibitory effect on the development of experimental tuberculosis in the guinea pig.

Bliss and Long[36] have recently noted a curative effect on mice infected with Clostridium welchii.

Rosenthal, Wooley and Bauer[30] found sulfanilamide to be inactive against the virus of choriomeningitis in mice.

McKinley, Acree and Meck[37] have more recently tested sulfanilamide against the viruses of monkey poliomyelitis, rabbit fibroma, and rabbit myxomatosis and found it ineffective in each of these virus diseases.

Mechanism of Action

The numerous experiments that have been made to establish the mechanism of action of sulfanilamide have been somewhat at variance with each other, so that there is no general agreement as to the way the drug acts in disease.

The fact that Colebrook,[4] Long,[29] Rosenthal,[30] Mellon[39] and others have shown that it inhibits the growth of hemolytic streptococci in the test tube would indicate that some of the action is directly upon the organisms.

The suggestion was made by Levaditi and Vaisman[2] that prontosil may hinder capsule formation of the cocci, after which they are then rendered capable of being disposed of by the phagocytes.

Gay and Clark[38] put this suggestion to test with sulfanilamide and found that although the streptococci that have been checked in their development in sulfanilamide serum show degenerative changes and become swollen, the distorted cells are still to a degree encapsulated.

Long and Bliss[29] formerly considered "that phagocytosis of the streptococci by the polymorphonuclear leukocytes plays a paramount rôle in controlling the infection in the early stages of treatment and that later the monocytes join in this phenomenon." They also felt that the streptococci must be damaged to permit such a marked degree of phagocytosis by the leukocytes.

However, Mellon's experiments[39] showed no indication that phagocytosis occurs.

Later experiments by Bliss and Long[36] forced them to conclude that although there was an increase in phagocytosis and a decrease in free cocci in the peritoneal exudates of mice infected with beta hemolytic streptococci, it was impossible to decide whether this effect is primarily on the streptococci or on the phagocytes. In studies which they made with another organism, Clostridium welchii, however, they showed that bacteriostasis was the only demonstrable factor to account for the curative value of sulfanilamide in Clostridium welchii infection in mice.

Gay and Clark[38] prevented an otherwise fatal empyema by administering sulfanilamide to rabbits before intrapleural infection with a human strain of hemolytic streptococcus. They were able to demonstrate an inhibiting effect only on streptococci in vitro, when combined with serum, defibrinated blood and the pleural exudate from the treated animals. These findings together with the observation that there was an increased mobilization of clasmatocytes in the pleura of treated animals led them to conclude that the drug apparently produced a bacteriostasis sufficiently marked to protect the accumulated leukocytes and allow the natural defense macrophages to mobilize and destroy the invading organisms.

There was no evidence to them that the cell reaction which finally accounts for the disposal of the organism is other than local.

Gross[40] found that the degree of protection which sulfanilamide conferred upon mice infected with virulent streptococci was the same in splenectomized mice as that obtained in normal animals. This would suggest that the protection is not primarily concerned with the reticuloendothelial system.

Rosenthal and Veldee[41] were unable to neutralize the "skin" toxin of the streptococcus, either when the drug and toxin were injected into the ear of the rabbit or when the animal was given the drug before the toxin was administered.

Osgood and Brownlee,[42] culturing hemolytic streptococci in both human blood and bone marrow, found that if the cultures were allowed to grow for 18 to 24 hours it was impossible to sterilize them upon the addition of sulfanilamide in as high a concentration as 1 to 1000. However, if the inoculation were made with a small number of streptococci in the presence of sulfanilamide, the number of organisms began to fall at about 6 to 12 hours, and eventually these cultures became sterile. This effect could be obtained with as high a dilution of sulfanilamide as 1 to 100,000, a concentration about 10 times as dilute as required for bacteriostasis in broth alone. They further found that the presence of marrow cells resulted in a somewhat earlier fall and sterility of the cultures than occurred in the presence of serum alone. Other experiments led them to conclude that sulfanilamide had no direct action favoring unusual phagocytosis either on the beta hemolytic streptococci or on the cells of the marrow.

Their results indicated to them that the major action of sulfanilamide on the beta hemolytic streptococcus seemed to be the neutralization or destruction of the toxins and a decrease in the rate of multiplication of the organisms, thus enabling the normal bactericidal elements in human serum and the normal phagocytic action of the marrow and blood to overcome the infection.

They do not exclude the possibility of the drug having a direct bacteriostatic effect.

The negative results obtained by McKinley, Acree and Meck[37] with it in virus diseases suggested to them that the drug is unable to exert its action when the infecting agent has invaded the tissue cells (as in virus infections) and that in bacterial diseases (in which the organisms are usually extracellular) the action may depend partly on its effect on the organisms, as well as in permitting the host cells to maintain their usual defensive action without hindrance.

It would seem, therefore, from the knowledge now at hand, that one may conceive of the drug as acting in part through its direct bacteriostatic effect which weakens the invading organism, or in addition through its direct "antitoxic" action, thus preventing the host from being overwhelmed by the rapid increase of the organism, and allowing time for the normal protective forces of the body to dispose of the weakened invader.

The laboratory studies that have been made with this compound have indicated that it would prove to be a most valuable drug in the treatment of infections with beta hemolytic streptococci and meningococci, and of less but distinct value in pneumococcal infections.

Experience in the clinic has confirmed in large measure these laboratory findings. It has also been tried empirically in the clinic in many other conditions, the one in which it was found to have been an outstanding success in many clinics being gonococcal infections. It is difficult to infect animals with the gonococcus, and hence it was necessary to go directly to the clinic for such an investigation.

The first to report upon its use in gonococcal infections were Dees and Colston,[43] and Reuter.[44] Dees and Colston tried it orally in 19 cases of gonorrhea and found that the urethral discharge stopped in most cases in 2 to 3 days, the most striking feature of their experience being the checking of the progression of the infection. Reuter, using it orally in a series of 100 cases, obtained clinical recovery in 90 per cent of them. Since these reports it has become a standard treatment in many clinics for gonococcal infections.

Helmholz[45] found it of value as a urinary antiseptic, the urine being bactericidal for Staphylococcus aureus, Escherichia coli, Aerobacter aerogenes, and organisms of the proteus and pseudomonas group. In sharp contrast to the above he found a luxuriant growth of Streptococcus fecalis in urine that was strongly bactericidal for the other organisms. He further found that the same concentration of sulfanilamide was more effective in alkaline than in acid urine.

CRITERIA FOR ADEQUATE DOSAGE AND PROPER ADMINISTRATION

Our knowledge of the correct dosage to be employed is perhaps more limited than our information as to the mode of action of the drug. We are still uncertain what the optimum blood concentration of sulfanilamide should be in the various infections for which it is used.

Long,[29, 46] who was the first to report upon the use of the drug in this country, considered that in meningococcal and streptococcal infections it was necessary to administer orally a large enough initial dose so as to secure a blood level of 10 mg. per cent within 4 hours, that is, at the time when its absorption from the gastrointestinal tract is practically complete. This meant the use of about 3 to 6 grams as the single initial dose for an adult of average weight. This was to be followed by smaller doses of 1 to 1.3 grams every 4 to 6 hours. Experience has shown that a more uniform blood concentration may be kept with a 4-hour interval for the spacing of subsequent doses than with the 6-hour spacing.

If for any reason the stomach does not retain the drug, or the parenteral use seems desirable, such blood concentration figure may be reached by giving it as an 0.8 per cent solution in physiologic saline by hypodermoclysis, the dosage for adults being 500 cc. of an 0.8 per cent solution followed by 300 cc. at 8-hour periods during the first 24 hours.

The drug has been found to be nonirritating to the meninges, and if given subdurally the same solution used for hypodermoclysis may be given in small amounts (10 to 25 cc.) by gravity at the body temperature, after the removal of about 5 cc. more cerebrospinal fluid than the solution to be introduced measures.

Brown and Bannick[20] of the Mayo Clinic regard the 10 mg. per cent blood concentration as adequate in cases of septicemia and severe infections and favor its early establishment, but they were impressed with the efficacy of the drug in low concentration, such as 4 to 7 mg. per cent in mild infections.

This finding together with the probability of the higher concentration producing toxic effects, led them to suggest that perhaps the initial concentration should be reached more slowly except in fulminating cases.

Van Slyke[47] considered that the method of choice in gonorrhea was to give the drug in an intensive manner, i.e., fairly large doses over a short period of time. He also found that a blood concentration of 8 to 10 mg. per cent was less effective than one of 15 to 18 mg. per cent. To secure this high blood concentration required an initial dose of about 8 grams for the first day and about 4 grams daily thereafter.

On the other hand Reuter[44] obtained a higher percentage of cures in gonorrhea than did Van Slyke, yet Reuter used but 2.7 grams (40 grains) daily over a 3-day period.

It would seem that in localized gonorrhea the blood concentration may be lower than in generalized infections, since the drug exists in the urine in a much more concentrated form than in the blood.

It is customary now to administer sodium bicarbonate with sulfanilamide, 1 gram for each gram of drug. This guards against the possibility of acidosis as well as provides a more favorable reaction for the drug to exert its bactericidal effect in the urine.

CONCLUDING COMMENTS

It should be emphasized that the occurrence of hemolytic anemia, hemolytic jaundice, and especially agranulocytosis are rare, and as stated previously, such conditions may well be regarded as being due to idiosyncrasy. Whether this idiosyncrasy is a congenital hypersusceptibility or has been produced by the previous or simultaneous administration of other drugs is not known.

It is not improbable that there will be found to be an etiologic relationship between the blood effects and the use of other closely related drugs of the aniline group, as well as other drugs which are known to affect the hemotopoietic system, as, for example, arsenic and lead.

The widespread use of the salicylates, particularly in the form of aspirin, now a household drug, may be one of the benzol derivatives that establishes the substrate upon which sulfanilamide builds to acquire its unusual toxicity. Or, it may be due to the medicinal use of aminopyrine (pyramidon) which in itself will produce blood destruction.

Until more is known about the production of the blood changes it is best to inquire of all patients whether they are taking proprietaries, also to withhold all drugs except sodium bicarbonate and serum therapy during the period of sulfanilamide therapy. Furthermore, frequent blood examinations should be made if therapy is to be continuous.

The drug should not be a common household remedy, and moreover, it should not be given to ambulatory patients whose duties require a clear unclouded intellect, as, for example, automobile drivers.

From the standpoint of clinical usefulness one may say that it is of greatest value in infections due to beta hemolytic streptococci, especially in puerperal fever, erysipelas, streptococcal septicemia, streptococcal sore throat, surgical infections with hemolytic streptococcus, and gonorrhea.

It seems to be less useful in meningococcal and pneumococcal infections.

The evidence is still very incomplete to indicate its usefulness in gas bacilli infections (Clostridium welchii), scarlet fever, and staphylococcal, typhoid and paratyphoid infections.

It is regrettable that it is regarded by many as a panacea.

The clinical use of the compound in general practice should be limited to those infections in which it has been shown to be of great value, its use being reserved in other conditions to those who will use it under experimental conditions in controlled clinics. Sulfanilamide is of unusual interest for two reasons: (1) It is the first drug to be of clinical value against bacterial infections, and (2) it is unique in that it is more effective against organisms of high rather than of low virulence. The drug will maintain for itself a very high place in our list of therapeutic agents, if it is not too greatly abused.

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ADVANCES IN THE STUDY OF CORONARY ARTERY DISEASE*

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Case 1: O. H., a lawyer, aged 44 years, sought life insurance on May 21, 1937, and was rejected because his blood pressure was found to be 175 systolic and 126 diastolic. He had had no headache, no dyspnea on exertion, no substernal pain. He has been active for 20 years in his profession and in public life. He is married and the father of 5 children. His food has been simple and his digestive and excretory functions unimpaired. His use of tobacco in the form of cigarettes and tobacco has been somewhat free and that of alcohol has been moderate. His father lived to be 77 years of age and his mother, 71 years of age, is in good health. Three sisters appear in perfect health.

The patient is 69 inches in height and weighs 192 pounds. He is not of particularly plethoric aspect. He is alert mentally and his disposition is good-natured. Dental examination reveals 2 infected teeth. The tonsils were cleanly removed 16 years ago. The peripheral vessels and the retinal arterioles show no pathologic changes. The heart is slightly enlarged (M. R., 5.4 cm.; M. L., 11.5 cm., and chest 31.2 cm. in the 6-foot film). The heart sounds are clear; A_2 is somewhat accentuated. Except for relaxation of the inguinal rings, with definite bulging from the right, the remaining details of the examination were normal. Three voidings of urine were entirely negative, its concentration in 2-hourly specimens reached the specific gravity of 1.026, with a night output of 350 cc. The blood Wassermann test was negative.

The electrocardiographic study reveals normal sinus rhythm, normal auriculoventricular and intraventricular conduction, normal S-T segments and upright T waves in the standard leads. Left axis deviation is found in all leads. The Q_4 wave is absent, thus giving a positive monophasic deflection in the precordial lead, and indicating myocardial damage due to coronary artery disease (Fig. 1).

The clinical diagnosis thus arrived at is chronic hypertension, cardiac hypertrophy and early myocardial degeneration, resulting from coronary sclerosis, Class II-A.

This case history has been given by way of introduction, because it shows concisely what can be accomplished by available diagnostic methods in the early recognition of coronary disease. In particular, it indicates the decisive value of the chest lead. A definite diagnosis has been reached even before the appearance of symptoms, and now, if ever, the patient is in a position to profit from the obvious advantages of removing foci of infection, of lessening the metabolic burden of overweight and of limiting in some degree the activities of his life. The case is useful also, as a simple picture of early coronary disease, for comparison with later stages, when the situation becomes a great deal more involved.

The story of coronary arteriosclerosis, as study of the literature of the last two decades will show, has in large measure been written around the twin themes of thrombosis and the electrocardiographic method of its study. That substantial and even brilliant progress has been made in the general understanding of the coronary problem and notably in the practical aspects of its diagnosis, prognosis and management cannot be doubted by one who leaves his present point of vantage to read again the classic "Diseases of the Arteries and Angina Pectoris" of Allbutt. The riddle, therein presented in 1915, its wealth of clinical and pathologic detail only partly impaired by interpretations since discarded, has come appreciably nearer its reading; and this by the pursuit of two subjects then rising upon the horizon—coronary thrombosis as a disease picture apart from angina pectoris, and electrocardiography as a means of recording myocardial values.

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* For the use of the case material of this study the permission of the Medical Director, Veterans Administration, is acknowledged, the opinions and conclusions being those solely of the author.

Not that the path of the clinico-electrocardiographic study of coronary artery disease is still unattended with difficulties, as the physician finds when he attempts to prove in his patient the presence and site and severity of myocardial damage. These difficulties concern the choice of technical method, the criteria of interpretation, the failure of physical and instrumental findings to conform with the arterial and the myocardial lesions revealed at necropsy,[1] and at bottom, important, if not fundamental, concepts relating to the anatomical structure and electrophysiology of the heart.[2] Under the circumstances, the clinician must continue to depend on empirical data, cautious against the danger of reading too much into normal variations of the record, but eager to bring to perfection the electrocardiographic method. Such considerations underlie the following effort to apply the newer criteria of electrocardiography in the clinical study of coronary disease.

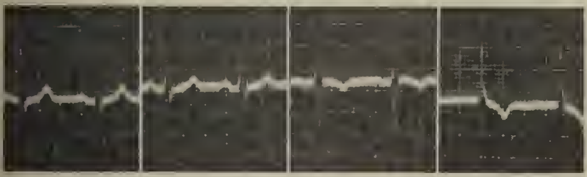

Fig. 1. Case 1.

The material is made up of 100 consecutive clinically definite cases of coronary artery disease in white men ranging in age from 40 to 75 years. The sample turned out to be an exceedingly homogeneous group of the American-born descendants of English, Scotch and Irish and a lesser number of German and French settlers of at least two and usually more generations ago. By occupation these men are small farmers, textile operatives, and the owners of country stores, filling stations and garages, besides a sprinkling of executives, professional men, salesmen and office workers. They are a cross-section of the population of three predominantly agricultural states whose small cities are now attracting an increasing number of industries.

For the most part examination and treatment were sought upon the advice of the family physician to whom they had gone because of circulatory symptoms. As a commentary on the importance of the problem, it is interesting that the 100 men with coronary disease under review comprised approximately one sixth of the male admissions during the period of selection. Negro patients have been excluded from this study, not because of the lack of coronary disease in this group but because of at least two possibly confusing factors—one, their well known hyposensitiveness as a race to pain, which makes the anginal history somewhat less typical, and the other the increased incidence of syphilitic aortitis. No recognized case of rheumatic, syphilitic or thyrotoxic heart disease has been here included.

These patients with coronary disease have been placed in three groups: (1) Coronary thrombosis, (2) angina pectoris, or preferably coronary sclerosis with the anginal syndrome, and (3) myocardial degeneration due to coronary artery disease as manifested by congestive heart failure (Table 1). The diagnoses were made according to the commonly accepted criteria.[3] Substernal pain or sense of oppression on effort, ceasing promptly with rest or the sublingual use of nitroglycerin, was taken as the cardinal symptom of the anginal syndrome. When the pain, on the contrary, did not yield to rest or a vasodilator, but was so persistent and severe as usually to require the use of morphine and was accompanied by varying evidence of shock and myocardial infarction, this history was accepted as that of coronary thrombosis. Dyspnea on exertion, without pain, was accepted as the earliest symptom of congestive failure; and orthopnea, paroxysmal nocturnal dyspnea, muffled heart sounds and gallop rhythm were often added to the picture of left ventricular failure. In the majority of patients, cyanosis, distended neck veins, basal râles, edema and an enlarged tender liver betrayed the added failure of the right side of the heart. The lesson of the clinic, however, like that of the post-mortem room, is that history, physical findings, diagnostic judgment and conceptions of disease, are all fallible; that the picture of progressive myocardial degeneration often masks painless infarction; that anginal pain and its hyperesthesia are frequently more than momentary; that the patient's description of his sensations may be extraordinarily bizarre, as in the case of the man who shot his favorite dog and had pain set in simultaneously in the fingers of both hands and travel by slow degrees up each arm until the two waves met in the midchest in a typical lasting attack of thrombosis. In such instances it is clear that electrocardiographic findings are more than usually helpful, as in cases of this series in which pain and other symptoms of heart disease have been masked by bronchial asthma, pyloric obstruction, gall-bladder disease, cerebral accidents, and renal insufficiency. Hypertension has been predominant in the three groups, and involutional arteriosclerosis comparatively unimportant. The history of previous high blood pressure, hypertensive retinal disease and cardiac hypertrophy suggested a latent or virtual hypertension in 4 cases of coronary thrombosis and in 4 cases of congestive heart failure (Table 2).

TABLE 1

Patients by Disease and Age Groups

YEARS	CORONARY THROMBOSIS	ANGINA PECTORIS	MYOCARDIAL DEGENERATION
40–49	10	28	27
50–59	7	5	6
60–69	5	4	6
70–79	1		1
Total.......	23	37	40

The electrocardiographic study of our patients was undertaken whenever possible at the time of admission, and in the case of those with congestive heart failure, before the use of digitalis. To patients with recent infarction or with the anginal syndrome, digitalis was not given;[4, 5] in cases of ventricular failure, when patients had received the drug before admission, or required digitalization to restore or maintain compensation, it was not, as a rule, considered advisable to interrupt its use for a period of time sufficient for its effects on the electrocardiogram to subside, and in such cases allowance was made in interpreting S-T and T wave values. Serial electrocardiograms have frequently demonstrated their value in proving the progression or regression of myocardial damage.

The anteroposterior chest leads and the two chest-limb derivations as originally proposed by Wolferth and Wood were early abandoned in the routine study of patients in favor of lead V alone. For a time the suggestions of Roth[6] led to the employment of apex and left and right pectoral leads with the right arm for the indifferent electrode. A return to the left pectoral-left leg derivation, now commonly referred to in the literature as the fourth lead, was made because of the advantages of technical convenience, accuracy in placing the electrode, which is not the case when the location of the apex impulse is left to a technician, and avoidance of mistakes in identifying the records of multiple leads. Others seem to have arrived at similar conclusions,[1, 7, 8] and thereby a basis for comparative

TABLE 2

Blood Pressure Findings in 100 Men with Coronary Artery Disease

B. P.	CORONARY THROMBOSIS	ANGINA PECTORIS	MYOCARDIAL DEGENERATION
Hypertension....................	12	30	34
Systolic MmHg			
150–200..........................	7	22	19
200–250..........................	5	8	15
Diastolic MmHg			
0–100..........................	5	9	4
100–150..........................	7	21	30
Virtual Hypertension............	4	6	2
Normal Pressure.................	7	7	6

study is found. More recently, however, certain other modifications have been recommended.[9] By the use of small flat German silver electrodes applied with special contact paste,[10] skin resistance and polarization have been negligible. The records have been taken with the patient recumbent, with the chest electrode applied in the fourth interspace, 2 inches from the sternal border.

The interpretation of the standard leads has followed the succinct criteria given by DeGraff,[3] supplemented by the texts of Pardee and of White. The normal measurements collected for lead IV by various workers have been used, especially the more recent and stricter limitations laid down by Shipley and Hallaran (1936)[11] and Sorsky and Wood (1937).[12] In studying the abnormal variations following coronary disease, besides the familiar work of Pardee, Parkinson and Bedford, Wolferth and Wood and coworkers, Wilson and associates, and others, the publications of van Nieuwenhuizen and Hartog,[8] Winternitz,[13] Bohning and Katz,[14] Sodeman,[15] and Proger and Minnich[16] have been found of especial interest. The electrocardiographic findings will be discussed according to the clinical grouping of our patients.

Coronary Thrombosis

The 23 patients with coronary thrombosis could be divided according to the commonly accepted criteria of S-T (R-T) segment and T and Q waves deviations between anterior infarction in 9 cases, posterior infarction in 7 cases, and combined anteroposterior involvement in 5 cases. In the case of a 60-year-old contractor who had had a sharp and persistent attack of lower substernal and epigastric pain, followed by fall in blood pressure, fever, leukocytosis and a 10-day period when the heart sounds were almost inaudible, the only electrocardiographic sign in 3 serial records was a delayed auriculoventricular conduction time of 0.21 sec. A second patient with a typical history of thrombosis, 1 month before, had in the electrocardiogram a Q_1 deflection of 2.5 mm., a QRS_3 complex of "W" type, and an $S\text{-}T_2$ segment of the "saddle" form, described by van Neiuwenhuizen and Hartog,[17] Weber and his associates,[18] and Uhlenbruck,[19] to which I shall refer later in discussing the anginal cases.

The S-T and T changes in lead 1, which pointed to anterior wall infarction in 9 cases were accompanied by absence of the Q_4 deflection in 4 patients and in 3 cases by the C_2 type of S-T deviation in the thoracic lead, which van Nieuwenhuizen and Hartog believe is characteristic of anterior infarct. They describe this type, admitting its resemblance to the $S\text{-}T_4$ depression described by Wood and Wolferth in anterior infarct, as "a flat or slightly concave descending S-T segment, proceeding at a pronounced angle (usually 125 or 130 degrees) into an ascending line which continues into a positive T wave or into the isoelectric line." In a patient of 75 years, with hypertension, auricular fibrillation and a terminal renal failure, a typical S-T convexity and a diphasic T wave in lead 1, suggesting anterior-wall infarction, was complicated by a deep Q_3 wave and a deep negative T_4 wave of 12 mm., pointing to posterior damage. The necropsy proved the presence of anterior apical infarction, but the remainder of the ventricular wall, including the posterior basal region, showed only diffuse myocardial degeneration, resulting from extreme coronary narrowing.

Third-lead S-T convexity and T wave inversion were present in 6 of the 7 patients regarded as having posterior infarction. In this group only 1 showed a deep Q_3 wave, and none showed an absent Q_4 wave. The changes in the remaining patient are not clear. This was a man of 45 years, without rheumatic or syphilitic history, who has a blood pressure of 230 systolic, 100 diastolic, and who shows the characteristic signs of aortic insufficiency and a greatly enlarged left heart (M. R., 3.6 cm.; M. L., 13 cm.; chest, 28 cm.). The electrocardiogram showed pronounced right axis deviation, notching and slurring of the QRS complex in all leads, convex S-T segments and inverted T waves in leads 2 and 3. In lead 4 the Q_4 wave was 2 mm. and the T wave was 12 mm. deep. There was a delayed auriculoventricular conduction time of 0.25 sec. Whether the S-T and the T abnormalities were to be interpreted as related to hypertension, to aortic insufficiency, to what is probably an early bundle-branch block, or to myocardial infarction, was uncertain. A second electrocardiogram, made 2 months later, shows the absence of axis deviation, the other features remaining relatively unchanged.

The remaining 5 cases are alike in giving the picture of advanced myocardial disease with little or no cardiac reserve, and in having low and distorted initial ventricular deflections in all leads. Winternitz in 1934 gave a detailed description of cases with low voltage. Two groups, the first characterized by small R_1 and deep S_2 and S_3 waves, the second by negativity of the principal deflections in all leads, he showed to be associated with anterior-wall infarcts. The third group, suggesting necrosis of both anterior and posterior walls of the left ventricle, he recognized by the shrinking of all the main waves. Four of my patients are placed in this group, the highest R wave being under 5 mm. in height. A fifth patient, with R_1 and R_2 waves 7 and 8 mm., respectively, had Q_3 and Q_4 waves each 3 mm., a convex R-T segment in leads 2 and 3, and an upright T_4 wave, thus suggesting double infarction.

CORONARY SCLEROSIS WITH THE ANGINAL SYNDROME

Since the diagnosis of angina rests essentially upon the patient's description of substernal pain on effort or with excitement, the objective findings furnished by the electrocardiograph are particularly welcome. What I believe to be significant QRS and S-T alterations were found in the standard leads in 31 of the 37 patients, supplemented by abnormalities of the fourth lead in 10. These changes included a Q_1 wave in 1 patient, a Q_3 wave meeting Pardee's criteria in 5 patients, alterations of the S-T segments in other than the third lead alone in 21 patients. There was the "M" type of QRS_3 in 2 patients. In 3 cases in which there was doubt concerning $S\text{-}T_3$ changes, the fourth lead showed definite abnormalities. Q_4 was absent in 5 patients, 1 mm. in 1, and 1.5 mm. in 3 patients. There was a C_2 type of $S\text{-}T_4$ in 4 patients, elevation of this segment in 1, and depression in 5. The T waves were negative or diphasic in other than lead 3 alone in 2 cases. The association of a low erect T wave, an erect T_3 wave and a definite S_2 wave was found 8 times, but in 4 of these patients left axis deviation was absent. T_4 was over 10 mm. in depth in 5, all with other abnormalities. In all, only 4 patients with coronary sclerosis, or 10.8 per cent, failed to show electrocardiographic abnormality.

In these patients with uncomplicated coronary sclerosis the study of the "saddle-shaped" S-T curve mentioned and illustrated (Figs. 14 and 17, of the article on the electrocardiogram in hypertension, by van Nieuwenhuizen and Hartog)[18] was of especial interest. Twenty-two of our patients were found to show S-T segments of this saddle contour, "an abnormality which in its pure form is almost exclusively found in cases of coronary sclerosis." This deviation is a curve with upward concavity of the S-T segment, which as a rule in our records has taken its origin somewhat above the isoelectric level from the descending, broadening limb of the R wave. The seat of the saddle may or may not sag below the isoelectric line, and merges into a broad-limbed upright T. In this series it occurred in lead 1 alone 4 times, in lead 2 alone 3 times, in lead 3 alone 4 times, in leads 1 and 2, 3 times, in leads 2 and 3, 3 times, in leads 1, 2 and 3, 5 times. Saddle-shaped S-T curves in the first 2 leads have been associated with convex $S\text{-}T_3$ curves in 4 cases, and with definite abnormalities of rhythm, auriculoventricular conduction and changes in Q waves, QRS complexes and T waves in a total of 18 cases. Thus, in this series it has not often been relied upon as the only evidence of structural damage; in other patients with the anginal syndrome it has been the sole finding and it is believed, in the light of this experience and observations of the records of normal hearts, that the saddle-shaped S-T segment is a helpful and important finding in patients with coronary arteriosclerosis. Like the convex S-T segment, but in the opposite phase, it is probably to be thought of as the result of interference with the normal retreat or subsidence of the electric activity in the ventricular muscle.

MYOCARDIAL DEGENERATION

The 40 patients whose coronary disease had caused myocardial damage leading to congestive failure naturally included a large number of desperately ill men; there was electrocardiographic evidence of disease in 39 and in the standard leads in 36. Lead 4 was essential, therefore, to electrocardiographic diagnosis in only 3 patients, or 7.7 per cent, although it gave positive findings in at least 21 patients, including 8 with Q_4 wave absent, 1 with monophasic negative main deflection, 2 with positive T_4 wave, 6 with deep T waves ranging from 10 to 18 mm., and 5 with anisoelectric S-T segments. There was auricular fibrillation in 2 cases, auriculoventricular block in 4 cases, intraventricular block in 6 cases, Q_1 waves in 2 cases, a large Q_3 wave in 1 case, and QRS complexes of "M" or "W" type in 12 cases. Convex S-T curves were present in lead 1 in 5 cases, in lead 3 in 5 cases (in all of which there were other significant changes), and in multiple leads in 6 cases. The S-T "saddle" curve was present in 13 cases, in 7 of which it was found in 2 or more leads. The association of a negative or low-positive T wave in the first lead with a positive T wave in lead 3 was found in 14 cases. In 10 other patients of the series the presence of negative or diphasic T waves was robbed of significance by possible digitalis effect.

LEFT AXIS DEVIATION

In this group of 100 cases, left axis deviation was present in 59, as shown by standard and thoracic leads combined. The fourth lead alone showed left axis deviation in 28 patients, or 47 per cent. Of the coronary thrombosis subgroup, only 6, or 26 per cent, showed left axis deviation. In the patients with angina, the number of cases rose to 23, or 60 per cent, and in those with myocardial degeneration and congestive failure, to 31, or 77 per cent.

Why, in patients with chronic hypertension and consequently left ventricular hypertrophy and dilatation so predominant, left axis deviation is relatively infrequent, appears to be a matter of diagnostic significance. The answer, van Nieuwenhuizen and Hartog[17] concluded, is to be found in the interfering factors. In youth the longitudinal position of the heart outweighs the effect of dilatation; in early hypertension the enlargement is in a sagittal plane only, and hence disclosed by the chest lead; later, coronary sclerosis and myocardial damage, by removing portions of the heart wall from electrical activity, and by introducing various defects in conduction, serve to prevent or obscure the shift of the electric axis. Absence of left axis deviation in patients in whom it is a logical expectation demands a search for explanatory disease. In this series the most outstanding example of this anomaly was the patient already mentioned with right axis deviation in the presence of hypertension, aortic insufficiency and left-sided hypertrophy, without right ventricular involvement. The explanation, in my opinion, is probably to be found in the infarction of the left ventricular wall, produced by coronary thrombosis; the later return to the state of no axis deviation is due to the formation of further infarcts and the setting up of a new balance of electrical forces. Between the 2 records the patient has had several entirely characteristic attacks of pain, but one cannot say that the clinical picture has changed in favor of right ventricular failure.

The uncertainties of axis deviation interpretation at the present time are reflected in the recent critical study of the Robbs,[20] whose readings were based on simultaneously recorded leads.

SUMMARY AND CONCLUSIONS

In a series of 100 consecutive patients with coronary artery disease, there were found 23 cases of coronary thrombosis, 37 cases of coronary artery sclerosis with the anginal syndrome, and 40 cases with coronary artery sclerosis with myocardial degeneration resulting in congestive failure. In these 3 groups electrocardiographic evidence of disease was found in 95, 89, and 97.5 per cent, respectively. That lead 4 alone contributed decisive findings in only 5 patients understates its value; in 31 patients there were significant chest lead abnormalities, not including minor variations in size and contour of the

QRS deflections and T waves considered indicative of structural change by others.[1] In electrocardiographic diagnosis, as elsewhere, multiple findings are mutually supporting and highly reassuring; to this end, the use of the fourth lead is indispensable.

The study of patients whose heart disease has developed into the full clinical picture of coronary insufficiency has thus yielded a high percentage of positive results in indicating the presence, if not, in many cases, the exact location or nature of myocardial damage. It follows that the electrocardiographic changes here encountered in the later stages of hypertension and coronary arteriosclerosis are to be sought in patients earlier in their course, before the day of thrombosis, angina or failure is at hand. Of such changes, the S-T segment of saddle shape and the absence of axis deviation when logically it should be found, I believe offer new criteria of diagnosis which will be of especial value.

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ABSTRACT OF PAPER READ BEFORE THE SOCIETY

"Observations on the Toxic Manifestations of Sulfanilamide Therapy,"* **Perrin H. Long, M.D.**, Baltimore, Md.

It is obvious that the proper use of any therapeutic compound calls for a knowledge of its possible harmful effects. This is especially true in regard to therapy with sulfanilamide because this chemotherapeutic agent while possessing a low degree of acute toxicity for both man and animals is capable of producing a wide variety of undesirable side-effects in human beings.

In this communication I will discuss briefly the toxic manifestations which have occurred in the course of sulfanilamide therapy of 335 patients in the wards of the Johns Hopkins Hospital. One hundred and thirty-five of these patients were ill with beta-hemolytic streptococcal infections and the remainder were suffering from other types of infection.

Among the common toxic manifestations are those due to the acute toxicity of sulfanilamide, such as anorexia, headache, nausea, dizziness, a lack of acuity, and in some instances vomiting. These symptoms are due to the action of the drug upon the central nervous system and are generally minimal in patients who are kept in bed during the period of treatment. Occasionally in ambulatory patients they are so severe that therapy has to be discontinued.

Cyanosis of varying degrees is seen in all patients treated with sulfanilamide. In our experience, the cyanosis has not been associated with sulfhemoglobinemia. It may be associated with the formation of methemoglobin. The cyanosis is not dangerous and does not constitute itself as a contraindication to further treatment.

Clinical acidosis occurred in 3 per cent of the 335 patients. The routine administration of bicarbonate of soda during sulfanilamide therapy does away with the possibility that acidosis will develop. When parenteral sulfanilamide is prepared, one sixth molar sodium lactate should be used as the solvent in order to prevent acidosis from developing.

Jaundice (without anemia) has occurred but once in this series. This patient recovered promptly when the sulfanilamide was discontinued. There has been no

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* Presented at the Annual Scientific Assembly, May 5 1938.

(*Continued on page 200*)

STUDIES ON OXYURIASIS

XV. A STUDY OF FIVE HUNDRED AND FOUR BOYS IN A BOY'S CAMP

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Although the biological fact that the female of the pinworm, *Enterobius vermicularis*, migrates to the perianal region to deposit its eggs has been known for many years, it has not been until recently that this knowledge has been applied to any great extent to the diagnosing of this parasitic infestation. Textbooks continue to recommend that the diagnosis be based upon the examination of the stools for ova, examination of fingernail scrapings for eggs, and the examination of the stools for parasites after enemas, purges and drugs. Cram, et al.,[1] have shown that none of these methods is satisfactory in practice, not only in that many cases are undiagnosed but that, other than the examination of the stools for ova, the methods are attended with a cumbersome and complicated technic.

Incidence studies using other methods of diagnosis have been carried out, the majority in Europe, using the examination of the rectal feces and anal and perianal scrapings, and material obtained by means of swabs made with match sticks, spatulas, gallstone spoons and other improvised instruments. These methods generally revealed very high incidences of pinworm infestation. Wright and Cram[2] record that in 102 of their cases known to be infested with pinworms, only 14 showed ova in the stools, thus demonstrating the rarity of ova in the stools of infested cases. When eggs are found in the stool, they represent a chance passage of a gravid female in feces, with the subsequent rupture of the worm and the deposition of eggs, or adherence of eggs at the perianal region to the stool during defecation, so far as is known.

Hall[3] devised an improved type of swab, called the NIH swab, for the diagnosing of pinworm infestation by stroking the perianal region with a glass rod tipped with a small square of cellophane, and then examining the cellophane microscopically for pinworm ova. This method of examination has many advantages over previous methods and undoubtedly offers a better chance for the detection of the ova than any method which has been used previously.

One of us (Bozicevich[4]) has reported an oxyuriasis incidence of 31.3 per cent on positive cases found by using the NIH swab, these findings resulting from one swabbing only of each of 230 boys at the Washington Metropolitan Police Boys' Camp during the summer of 1936. This investigation has been made again during the summer of 1937 at the same camp, this time using repeated swabbings instead of one swabbing. The individuals swabbed were white males between the ages of 6 and 16 from all parts of the city of Washington, most of them in a relatively low economic status. There was no selection of camp members made; any boy who was a member of the Boys' Club and who made application to go to the camp was accepted.

METHOD OF STUDY

Swabs were made on the boys the first thing in the morning before washing or defecating, and often before dressing. During the first 5 weeks of camp, 4 swabs were made on each boy, unless a positive swab was found during the examination of a lesser number. The first swab was taken on the first morning in camp; the second, on the second; the third, on the third; and the fourth, on the sixth morning. During the sixth week of camp, swabs were made on 3 consecutive mornings, and during the remaining 3 weeks of camp 2 consecutive swabs were made. It is believed that if but very few eggs are present on the perianal region they may be missed in swabbing. The majority of the positive swabs represent the detection of eggs deposited by a gravid female migrating during the preceding night, but in spite of frequent swimming and frequent bathing some eggs remain on the perianal region for 1 or 2 days. The cases that are negative on an earlier swab and found to be positive later probably are mostly those with lesser degrees of infestation which do not have nightly migrations of gravid females, although under the law of chance some of those cases detected on the first swab are light infestations with an occasional migration falling on the night before the swabbing.

Inasmuch as all new boys reporting to the camp were swabbed, this study represents a random study for this group, namely, white males, mostly of a low-economic status, between the ages of 6 and 16 years, residing in Washington, D. C.

Results of Study

Table 1 shows the results of the swab examinations, tabulated according to weeks. Of 504 boys examined, 289, or 57.3 per cent, were found to have pinworms. Nine boys were dismissed from the camp before their series of swabs were complete.

TABLE 1

GROUP	FIRST SWAB		SECOND SWAB		THIRD SWAB		FOURTH SWAB	
	Number Examined	Number Positive	Number Examined	Number Positive	Number Examined	Number Positive	Number Examined	Number Positive
Week of July 3, 1937	76	37	39	6	33	2	31	4
Week of July 10, 1937	70	29	40	7	30	2	24	5
Week of July 17, 1937	74	26	47	5	42	3	38	10
Week of July 24, 1937	40	11	29	6	23	4	19	4
Week of July 31, 1937	69	29	40	10	30	3	27	5
Week of August 7, 1937	37	8	29	4	25	2		
Week of August 14, 1937	49	20	29	4				
Week of August 21, 1937	57	24	33	6				
Week of August 28, 1937	32	12	20	1				
Total	504	196	306	49	183	16	139	28

It is to be noted that the percentage found to be positive decreased quite rapidly after the first swab, except on the fourth swabbing. On this swabbing, 2 days had elapsed without any swabbing, and the increase in the number of positives is probably due to the fact that a few eggs from a previous migration are likely to remain on the perianal region for several days, and the eggs found may have been deposited on any one of the 3 preceding nights. From a practical standpoint, swabs not taken consecutively will more likely be found positive than the same number taken on consecutive days, because of this residual infection from days previous to swabbing.

In this series, the first swab detected only 68 per cent of the cases, and if only one swab had been used throughout, 32 per cent of the cases would have been undetected, and the indicated incidence in the camp would have been 39 per cent, as compared with the incidence of 31 per cent which was found the previous year on the basis of only one swab. These results, indicating the value of repeated swab examinations, are comparable to those reported by Cram, et al.[1] These figures reveal an incidence of 57.3 per cent for this group. This figure would have been yet higher if more swabs had been made. It is believed that some of the boys with lighter cases were cases that would not by themselves maintain an infestation, but that the boys occasionally ingested eggs and had migrations due to a heavy exposure from another member of the family or playmates. Such boys, if removed from this source of infection, would probably have a spontaneous recovery, either because of habits not conducive to reinfestation or due to some unknown factor.

Observations of Migrations

During the latter weeks of camp we made a practice of examining the anal regions of the boys who were found positive on the first swab examination. The camp rules allowed the boys to play until 8:30 P.M. and required them to retire at 9:00 P.M. The examinations were made between 8 and 12 o'clock. About 50 examinations were made, and at any one examination fully half of the boys showed 1 or more gravid female pinworms; many boys showed several, and 1 boy consistently showed over 10 worms. The examinations were conducted without the use of instruments by placing the boy in the knee-chest position and gently spreading the buttocks apart. In many boys the anal sphincters would relax and allow a good view of the anal canal.

As early as 8 o'clock, gravid females would be found in the anal canal about an inch above the mucocutaneous junction; at 9 o'clock, the parasites would be found at the mucocutaneous junction. None was observed on the skin until some time, usually ½ hour, after the boys had been to bed, when they would be found on the skin, usually in moist areas, as far forward as the scrotum, and posteriorly and to the sides as far as 2½ inches from the anus.

TABLE 2

AGE IN YEARS	6	7	8	9	10	11	12	13	14	15	16	17	18	19	UNKNOWN
No. positive cases	5	11	27	38	39	50	34	31	41	10	2	1	0	0	0
No. negative cases	3	11	16	17	20	25	33	35	28	15	5	2	1	1	3
Total cases	8	22	43	55	59	75	67	66	69	25	7	3	1	1	3
Per cent positive	63	50	60	69	66	67	51	47	59	40	29	33	0	0	0

There was considerable correlation between the position of the parasites and their activity. Those higher up, when disturbed, would disappear in a few moments into a fold or higher into the canal. The worms that had migrated out usually made no attempt to move. The more active worms were sometimes seen to affix their heads to the skin or mucosa and wave their tails, apparently feeling for an adjacent surface. Locomotion seemed to be accomplished by the successive anchoring of the head and tail.

Within a few moments after exposure the pinworm would show an increase in opaqueness, probably due to drying. Along with this change there was a diminishing somatic activity. There would soon be observed a white mass forming at the region of the vulva, due to masses of eggs being extruded. Microscopic examination showed masses of eggs emerging from the vulva in a cylindrical stream, the masses frequently hanging in festoons. Violent uterine contractions continued long after somatic activity had entirely stopped. In the morning a shrivelled mass of material representing the body of the pinworm was sometimes found in the pajamas, but not without an intensive search.

All of the boys showing migrating pinworms denied any sensation attributable to the presence of the parasite.

ECONOMIC STATUS OF THE CAMP POPULATION

Analysis of the incidence according to economic status does not show any significant finding, due mostly to the fact that nearly all camp members were from families with a low income, and the differences in income were not sufficient in degree to be an index of home environment.

AGE INCIDENCE

Table 2 shows the number of positive and negative cases according to each year of age, and the percentage having pinworms at each age.

The average age for the positive cases is 11.3 years and for the negative cases is 12.2 years. Because there are too few cases under 7 years of age and too few over 15, the figures for these age groups are without significance. However, the results convey the impression that those of ages under 14 are the more susceptible, and after that age the incidence begins to diminish.

CORRELATION WITH THE SIZE OF THE FAMILY

That the size of the family is an appreciable factor predisposing to pinworm infestation may be shown by Table 3. This table shows the number in the families of the positive and negative cases.

Most of the boys in the camp came from large families, which may, in part, explain the high incidence. For the negative group, the average family size is 5.5 and for the positive group the average family consists of 6.65 members. Statistical treatment of these figures shows that a true correlation exists between the size of the family and the incidence of pinworm infestation. This is not surprising in view of our present knowledge of the mode of spread of this parasite. The more members there are in a family, the more chance there is for the introduction of pinworms into the household by means of any member getting the infestation at school, work or play. Once introduced into the household, transmission to others in the family is a commonplace and usual occurrence. The crowding so often found in the larger families enhances each individual's chance of acquiring the infestation. Crowding increases the mathematical likelihood of infection in a geometric, not an arithmetic, rate (Taylor[5]).

TABLE 3

NO. IN FAMILY	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	UNKNOWN
No. positive cases	7	17	45	54	44	42	16	15	16	10	7	2	1	4	2	3	4
No. negative cases	9	22	37	39	32	21	19	16	8	0	2	1	0	0	0	0	9

SUMMARY AND CONCLUSIONS

By the use of the NIH swab, 504 white males between the ages of 6 and 16 years were examined for pinworms at the Metropolitan Police Boy's Club Camp. All boys reporting to the camp were swabbed. Most of the boys were of a low economic status. Four swabbings were used in the examination of 329 boys, 3 swabbings for 38 boys, and 2 swabbings for 138 boys. A total of 289 persons harboring pinworms were found, an incidence of 57.3 per cent. Of these positives, 68 per cent of the cases were found by the first swab; repeated examinations revealed the remaining 32 per cent. Swabs not taken on consecutive days will diagnose more cases than the same number of swabs taken consecutively. Analysis of the incidence according to age does not show a definite correlation, but is suggestive that the incidence begins to decline after 14 years. Of the negative group, the average family size was 5.5 and of the positive group, 6.65, and large families appear to be a factor predisposing to a high incidence.

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THE "ACUTE ABDOMEN" IN CHILDREN*

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The examination of a child requires a great deal of patience and tact, especially when he has acute abdominal disease. In the first place, the child is sick, peevish and suspicious of every move on the part of the parent, nurse and doctor. In the second place, a good history is difficult to obtain from parents or nurses.

Having gained all the confidence possible of the child, a preliminary examination, such as of the head, ears, neck, throat, chest, heart, temperature and pulse should be made, care being taken to avoid the part of which the patient complains most. Inspection of the abdomen may sometimes give valuable information. Irregularities of the abdomen in the form of peristaltic waves or tumor masses may be noted. Since the left half of the abdomen is less frequently involved, it is well to palpate gently that side first and to ascertain between crying spells any evidence of muscle spasm. Next, the right upper quadrant is palpated, and last, the right lower quadrant, where a great percentage of trouble is found. After this, an examination is made by light pressure to determine the presence of spasticity of the muscles. Percussion and auscultation should be carried out to elicit the degree of distention or the presence of dullness and the evidence of peristalsis. Deeper palpation may be tried after this, the points greatest tenderness being noted together with evidence of rebound tenderness. All these findings, coupled with facts as to the child's behavior since the onset of illness, will often make possible a differential diagnosis.

The "acute abdomen" may be divided into surgical and nonsurgical types. Pain is a dominant symptom in both groups. Its distribution, severity, onset, cessation, and relation to other symptoms and signs is of the utmost importance in arriving at a correct diagnosis. The location of the abdominal tenderness and muscle spasm is of great importance. A working knowledge of the cardinal symptoms of each pathologic condition aids materially in its diagnosis.

My aim in this paper is to set out these cardinal, most common signs and symptoms of the more common diseases in a brief and concise manner, without attempting to discuss every acute pathologic condition which gives rise to abdominal pain.

Acute Enterocolitis. The causes are usually improper foods or too much food. Intestinal allergic reactions may be considered under this heading. The behavior of a child during an attack is characteristic. He flexes his knees and thighs, clenches his fists, and cries until the attack passes off. The pains occur with peristalsis and usually are not severe, whereas in acute appendicitis the pains may be more severe and do not occur with peristalsis. In appendicitis also the pain is more of the persistent type. Diarrhea is a much more predominant symptom in enterocolitis. Palpation of the abdomen reveals no special tenderness in the region of the appendix, and muscle rigidity is usually not marked. The blood count may be the same in either instance. Rectal examination may show tenderness or a mass in appendicitis but seldom if ever in enterocolitis.

Acute Tonsillitis. A history of sore throat or running nose or cough may be obtained. The temperature is usually high, between 101°F. and 105°F. The pulse rate is rapid, and the patient appears toxic. Examination of the throat may reveal grayish-white follicles upon enlarged swollen tonsils. Occasionally the abdomen is tender with slight rigidity. The blood count is of little value.

Acute Pyelitis. Acute pyelitis may usually be differentiated from acute appendicitis by a urinalysis (catheterized specimen). Microscopically the urine shows numerous pus cells, clumped, with an occasional red blood cell and a few casts. These patients usually have chills and fever early in the course of the disease and less severe abdominal pains. There is deep tenderness in the lumbar region, whereas in appendicitis the tenderness is more marked anteriorly. The pain in pyelitis is seldom referred to the epigastrium. The blood count is of little value.

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* Read before the Jacobi Medical Society, January 17, 1938.

Pneumonia, Especially of the Right Lung. Pain in the abdomen may be due to involvement of the diaphragmatic pleura or to radiation along the lower sixth intercostal nerve which supplies the lower part of the pleura and the abdominal wall. A history of a previous "cold" and of chills, fever and sweats may aid in the diagnosis. There may be abdominal rigidity with definite tenderness of the abdomen. It is usually intensified on deep breathing. Pneumonia is usually accompanied by high fever. Examination of the lungs in the early stages may not reveal any evidence of pneumonia. Roentgenograms of the chest may be of great aid, especially if the pneumonia is away from the periphery. The blood count is usually much higher in pneumonia, 25,000 or above, than in intra-abdominal disease.

Acute Appendicitis. I need not mention the typical attack of appendicitis with its epigastric pain at the onset, nausea or vomiting, rise in temperature and pulse rate, and tenderness in the right iliac fossa with rigidity of the muscles. Diagnostic difficulties arise when these signs and symptoms are absent. This may occur when the appendix is wrapped in omentum or lies between coils of intestines. There is usually tenderness on deep pressure but no tenderness or rigidity on light palpation. There may be absence of tenderness or rigidity if the appendix is located in the pelvis. Tenderness, except on rectal examination, may be absent even though the appendix may be gangrenous. The appendix may be retrocecal, then giving no evidence of tenderness or rigidity of the abdominal muscles. When the appendix occupies a low position it may cause inflammation of the vesical peritoneum, thereby producing urinary disturbances. Pus and blood may be found in the urine when the tip of the appendix is adherent to the right ureter. Hematuria may occur, possibly due to mild acute nephritis, but this complication is rarely seen. It is the "hidden" or "walled off" case of appendicitis that is seen too late for operation and accounts for most of the mortality. Such cases are wrongly diagnosed as food poisoning, gastric influenza, acidosis, etc. Valuable time is lost. One may avoid these errors in diagnosis by not expecting every case of appendicitis to present a "textbook" picture. A careful, thorough history is of the greatest importance. In appendicitis pain always precedes nausea and vomiting, elevated temperature and abdominal tenderness. If fever precedes pain the condition is not appendicitis. If vomiting precedes pain the condition is probably not appendicitis. The temperature and pulse rate may be normal. The three cardinal signs of acute appendicitis are pain, tenderness and leukocytosis.

Intussusception. The history of onset and the clinical features are classical. A healthy baby usually between the age of 4 and 18 months is seized with violent abdominal pains accompanied by evidence of shock. The pain passes off only to return again. Between the attacks the infant lies listless, and the skin is pale and moist. The pulse is thready and rapid. Examination of the abdomen may reveal a sausage-shaped mass usually located in the right lower quadrant, although it may be found anywhere within the abdomen and at times only by rectal examination. Free blood may be seen with the stool or alone. In atypical cases blood may not be passed per rectum. There may be no tumor mass palpable. In the diagnosis the important points are the history of pain and the palpation of the tumor. If intussusception is suspected and the tumor can not be felt, the infant should be examined under a light anesthetic. The history of pain with the presence of blood coming from the rectum may be sufficient to warrant surgical exploration.

Peritonitis. This disease may be primary but is usually secondary. It may be due to blows, falls or burns or to surgical traumatism. When secondary, it may arise from mechanical causes, such as malformation, intussusception, strangulation of the intestines, volvulus, foreign bodies, or from extension of an inflammation from adjacent lesions, such as pleurisy, perinephritic abscess, spinal caries, etc. Peritonitis may also occur in the course of, or following scarlet fever, influenza, pneumonia, tonsillitis, or other infectious diseases. The most frequent cause is acute appendicitis. Sudden onset is the rule, with high fever, vomiting and pain. The abdomen becomes swollen, tympanitic and tender, with its muscles rigid. The respiratory movements of the diaphragm are restricted. The tongue is dry and red. The pulse is rapid and small, at first hard, later thready. The mind remains clear, the facial expression is anxious, and the skin is moist. The patient prefers the dorsal decubitus with thighs flexed.

Pneumococcal Peritonitis. This occurs more frequently in older children, especially in girls, and has a high mortality. A careful history will often reveal a preceding head-cold or some other respiratory infection. The temperature is very high, ranging between 101°F. and 105°F. The pulse is rapid and thready, and the patient appears to be toxic. Pains in the abdomen are usually generalized with rigidity over the entire abdomen. Upon opening the abdomen, thick odorless fluid, having a greenish, yellow cast with many fibrinous flakes will be observed. The diagnosis is not easy. If a definite diagnosis of pneumococcal peritonitis is made, it should be treated as a nonsurgical condition.

Twisted Ovarian Cyst. The patient complains of pains which are usually severe and intermittent. There may be a high fever. The leukocyte count is usually very high. Rectoabdominal examination reveals a tumor mass in the beginning of the disease, whereas in acute appendicitis a mass will not be felt in the early stages.

Meckel's Diverticulum. This is a dangerous abnormality. It can endanger life by perforation, inflammation and peritonitis. It can cause acute obstruction and intussuception. It can, when peptic glands are present, produce a peptic ulcer which may perforate or lead to severe bleeding into the bowel. The clinical feature may be either inflammation or obstruction, or both. The greatest point of tenderness is usually around the umbilicus. The diagnosis is very difficult. It has to be differentiated from appendicitis, intussusception, polypi of the large bowel, and blood dyscrasias such as Henoch's purpura.

Inguinal Hernia. Acute strangulation may occur causing intestinal obstruction. The infant usually doubles up and screams with pain. Vomiting soon occurs. A small mass may be detected in the inguinal region. A negative history of a previously existing hernia may be obtained. Attempts to reduce this type of hernia are dangerous without operative procedure.

Pyloric Stenosis. This condition usually occurs in male infants. In a classical case one is given a history that the baby has been quite healthy for the first four weeks of life, has gained weight, and has been free from digestive disturbances. Then he suddenly begins to vomit, lose weight and becomes constipated. The vomiting is forcible and projectile. These babies usually become irritable, cry continuously, have an anxious look, and are usually wide-awake. Visible peristalsis usually can be seen, and a palpable tumor may be felt. These findings complete the clinical picture.

Mesenteric Lymphadenitis. This condition must be differentiated from acute appendicitis. The symptoms are not as severe as in acute appendicitis. It is probably due to a blood-borne infection, or it may come from a lymphatic seepage from the bowel. Upon opening the abdomen numerous lymphatic mesenteric nodes are found. The appendix usually appears normal. However, the appendix should be removed, but the nodes should not be disturbed.

Injuries to the Abdomen. If shock is not too great, an effort should be made to ascertain the extent of damage. A complete physical examination, including a plain roentgenogram of the abdomen, a blood count, and a urinalysis are often essential in making a correct diagnosis. If hemorrhage is suspected due to laceration of the liver or spleen, exploratory laparotomy offers little risk and will frequently save lives.

SYPHILIS AND CRIME*

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Surgeon General Parran has 6 "musts" on his program for securing better health throughout the Nation. He caused considerable flurry in the lay press when he announced with dramatic vigor number 1, "To wipe out that unmentionable disease, SYPHILIS, the end-results of which crowd our jails, our poor houses and our insane asylums."

It is commonly thought that syphilis has a definite relation to crime, but no careful student would claim that all criminals are made by disease. However, it is most certainly true that their lives and fortunes have been adversely affected by the handicaps that it has inflicted on them.

Of all the literature on syphilis, relatively few studies on the syphilitic seroreaction, with special reference to the relationship between syphilis and crime are recorded. In the Proceedings of Conference on Venereal Disease Control[1] is included a report on the prevalence, incidence and trend of syphilis. This report of 119,000 individuals, which represents the average prison population for Federal and State prisons in the United States, samples studied show on an average of from 160 to 170 per 1,000 individuals with a positive serologic test for syphilis. This is considerably higher than that found among other groups examined.

CHARACTERISTICS OF THE DISEASE

We must consider first that syphilis is a generalized blood stream infection of extraordinary chronicity and tenacity in which the spirochetes, while they seem to disappear or remain hidden somewhere for years, may multiply again at some point and produce new changes. Neither the vascular system nor the brain is apt to resist its poison. The damage may be slight and undetectable until the patient comes to autopsy.

Dementia paralytica (paresis),[2] a late stage of the disease, clinically is a most dramatic illness the mental symptoms of which vary somewhat with the character of the individual. It is remarkable, however, to observe how, under this infection, all minds are planed down to the same low level. It usually begins insidiously, with drowsiness, lapses of attention, peculiarities of conduct, moral obtuseness, and accentuation of the predominating personal characteristics, and proceeds to graver departures from civilized custom which often are shown in their true light in the police court. Confusion of ideas and failure of memory, together with loss of self-restraint, are soon accompanied by delusions of grandeur in which the patient becomes most extravagant in his belief in his own powers and possessions.

In general, it is stated that the proportion of neurosyphilitics is 3 males to 1 female. Of 16,176 first admissions to State Hospitals[3] there were 1,226 male paretics as against 288 female paretics. Moore[4] comes to the conclusion that the difference is dependent upon the fundamental biologic distinction between the sexes, namely, child-bearing, and finds that the proportion of paresis in sterile women is about the same as in men and that it is only in those who have born children that it is so much lower.

ILLUSTRATIVE CASE

To illustrate the insidiousness of the disease and its relation to crime, I cite the following case: A young, married white man of a prominent family was employed as a bank teller. The wife died following a criminal abortion. He remarried to a show girl shortly thereafter and both were found to have syphilis. By reason of inefficiency and atypical behavior he lost his position at the bank. His next employment was selling illicit liquor, and he was arrested several times but usually escaped penalty. Finally, he and 4 others attempted to hold up one of the gang leaders in a hotel but were captured in the act by the police. Because of his family prominence and political influence he was put on probation. During this time he was receiving antisyphilitic treatment from the family physician but was irregular in attendance. Partial paralysis developed in his left arm. At this time he came under my care. Examination revealed neurosyphilis. He was treated and clinically well responded. However, his crime tendencies remained. About 6 months ago he was charged with manslaughter and kidnapping in threatening a negro accomplice in previous misdemeanors, who had turned state's witness. With the aid of a clever lawyer he was freed on $20,000.00 bond. More recently he became involved with certain accomplices, who attempted to rob the safe in the home of a numbers racketeer, but the police being tipped off, killed one of the gang. The patient was successful in escaping at the time but gave himself up the following day when he learned that the police were looking for him, exclaiming "please put me in jail, I don't want to get shot." The salient facts of this case are that a former banker, son of a prominent family, became antisocial through neurosyphilis. I am thoroughly convinced that early recognition and adequate treatment would have saved this change in behavior and would have saved society money.

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How often, as pointed out by the late Dr. William A. White,[5] do we see a previously respected citizen, father of a family occupying an enviable social position, become at the height of his career an ardent worshiper at the shrine of Venus and Bacchus. Friends and relatives see nothing in these manifestations but the outcropping of original sin and are distracted by their inability to stay the career of drunkenness and vice upon which their erstwhile respected relative has entered. How many heartaches, how many pangs of anguish, how many blushes of shame could be spared the wife and children of such a man if the family physician did but recognize in these occurrences the symptoms and signs of syphilis and advise him what course to pursue!

The Incidence of Crime and Syphilis

A survey of blood and spinal-fluid findings in prisoners in the State Penitentiary of East Tennessee[6] showed that of 791 prisoners examined, 232 (29.3 per cent) were found to have positive reactions for syphilis. Spinal-fluid analysis revealed that 30.2 per cent of the whites, and 21.1 per cent of the negroes, or an average of 24.6 per cent of all persons studied had serologic evidence of central nervous system syphilis. The author of this report says, "It is interesting that the leader of a recent mutinous outbreak in the prison, a man of 28 years of age, was found to have paretic symptoms and a positive spinal-fluid reaction." This is the second incident in which the leader of a mutiny in one of the state prisons was found to have paresis.

From Fort Leavenworth United States Penitentiary[7] is reported a study of 2,740 prisoners, of which 21.7 per cent were syphilitics.

California State Prison Officials[8] examine all prisoners who enter that institution, including a routine Wassermann test for syphilis. Of 10,000 prisoners 921, or 9.21 per cent, had positive tests, 1,507, or 15 per cent, of them gave a history of a venereal sore, and 4,820, or 48 per cent of them gave a history of gonorrhea.

Wassermann tests on 1,335 prisoners at the Illinois State Penitentiary,[9] revealed 13.5 per cent positive reactions in white inmates and 30 per cent in negroes, with an average of 18.2 per cent for all. Men, aged 31 years or more, appear in a higher percentage in the syphilitic than in the nonsyphilitic group.

Keil[10] reports from the Ohio Penitentiary that of 2,000 men examined, 378, or 18.9 per cent, were positive for syphilis; 631 prisoners admitted having had a primary sore at one time or other; 1,293 admitted gonorrhea one or more times, and 586 stated that they had had a chancre also.

Positive blood Wassermann tests have been obtained in 121 boys committed to the New Jersey Home for Boys.[11] Their ages range from 8 to 18 years, the average being about 14 years. They consisted of both white and colored, with the colored predominating to the extent of 70 per cent. By the use of certain tests 25 per cent of these boys were classified as mentally subnormal. Of this group, 43 per cent had a positive Wassermann, which shows an incidence of subnormals among the syphilitics almost double that of the inmate population in general. The authors are convinced that almost all of the cases are congenital in origin.

Sugishita[12] reports from Japan that of 771 prisoners examined, 167 of them were Wassermann-positive. In contrast to the sex ratio found in this country, the female offenders were slightly higher in percentage than the male, i.e., 23 per cent were females and 21 per cent males. The positive number of seroreactions of these prisoners is approximately 10 per cent higher than that of the same number of people in ordinary life. Sugishita concludes that syphilis has an intimate relation to the abnormal person and therefore to crime itself as well.

Church[13] recently reports that among the first 100 admissions to Salem County Road Camp in 1936 of prisoners with short jail sentences, 15 per cent of the 33 whites were found to be syphilitic, while of 67 negroes 39 per cent had the disease, the percentage for the whole group being 27. In the same county a survey of the employees of a large industrial plant showed an incidence of 6.9 per cent with positive serologic evidence of syphilis.

Testimony in hearings before the Subcommittee of the United States House of Representatives, for the District of Columbia Supply Bill, revealed that the number of inmates at the National Training School for Girls was 49, of which 17, or 34.7 per cent, were syphilitic. There were 1 white girl and 16 negro girls in this group. The bulk of the population in this school is under 17 years of age. They are committed by Juvenile Court action and not Criminal Court action.[14]

The following data refer to the Lorton, Virginia, Reformatory and are published through the courtesy of Dr. F. R. Klune, Acting Senior Medical Officer:[15]

Felony Cases—Males

	Population	Positive Wassermann and Kahn Tests	Positive Per Cent
White	406	41	10
Colored	1,200	407	33.9
Total	1,606	448	28

Dr. Klune has allowed publication also of the following data in regard to the workhouse area at Occoquan, Virginia:

Misdemeanants Cases—Males

	Population	Positive Wassermann and Kahn Tests	Positive Per Cent
White	659	25	4
Colored	607	144	24
Total	1,266	169	14

At the Workhouse, men's division, a blood specimen is taken only on men who have a sentence of 30 days or more. This explains the lower incidence in this group as compared to the reformatory group, in which a blood specimen is taken of all cases. It is most unfortunate that this efficient medical officer is not provided with facilities for performing spinal-fluid examinations on these inmates with known syphilis.

A still higher percentage of syphilis is shown in the Women's Department at Occoquan:

Misdemeanants and Felony Cases—Females

	Population	Positive Wassermann and Kahn Tests	Positive Per Cent
White	43	11	26
Colored	121	58	48
Total	164	69	42

Church[13] claims and gives statistics showing that not only does the incidence of crime parallel the percentage of negroes in the population, but also the percentage of syphilis. This ratio is approximately 4 or 5 to 1, which seems to exist for the relationship of the percentage of white to negro, or white to negro criminality. Therefore, knowing the percentage of crime, the percentage of syphilis may be readily inferred.

CONCLUSION

The campaign against crime is a battle of many fronts. There can be no effective concerted action against crime until syphilis is recognized as one of the important underlying causative factors. The publicity-provoking elements are spectacular, but behind the front-line activities much patient and painstaking work must be done. It is not enough to pursue, apprehend and punish the malefactor and then after a residence in a penal institution of brief or long duration to release him more antisocial than he was when received. And, finally, the hope of improvement of crime conditions is small so long as citizens remain indifferent, uninformed or hostile to the control of syphilis. An ounce of prevention in the field of crime, as elsewhere, is equal to a pound of cure. Therefore, the early recognition, with intensive and adequate treatment of syphilis, is an important factor in decreasing the population of our jails and allied institutions.

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THE VESTIBULAR (BARANY) TESTS*

THEIR DIAGNOSTIC VALUE IN LABYRINTHINE AND INTRACRANIAL DISEASES

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Dizziness is a symptom so commonly encountered in medical practice, and yet so susceptible of varied interpretation, that a clear understanding of its true cause is most desirable in every case. It is for this reason that I wish to review the more important aspects of the so-called Barany or vestibular tests.

Dizziness is the true sensation of motion, rotation, or change of position in space. True dizziness or vertigo therefore is directly dependent upon the reactions of the vestibular end-organs to pathologic or artificial stimuli. The term dizziness should not be carelessly applied to obscure sensations of faintness, nausea, or mental confusion.

The physiologic mechanism whereby the individual determines his equilibrium or position in space is dependent upon the combined function of the sense of sight, muscle sense, and static and kinetic sense. Interference with the normal function of any one of the three senses causes a temporary imbalance; this is compensated in due time provided the remaining two function normally. Destruction or injury of any two senses, however, can never be compensated for, and the individual becomes a helpless invalid.

The Tests

The determination of normal sight and muscle sense are procedures in common usage. Yet the functional examination of the static and kinetic sense is equally important but little practiced. It is therefore my purpose to bring to your attention the method whereby one determines the abnormalities of the static and kinetic mechanism.

The functional examination of the internal ear is divided into two parts; one must first determine the presence of any spontaneous signs or symptoms referable to the cochlear and vestibular nerves. The presence of tinnitus, deafness, vertigo, nystagmus, past-pointing and falling is carefully noted. The presence of ataxia or muscular incoördination is then determined by means of the Rhomberg test, finger-to-nose and pelvic girdle tests, and the tests for adiadochocinesis. Whenever the findings suggest the possibility of an intracranial lesion a neurologic consultation is advised.

The second part of the examination consists of the artificial stimulation of the semicircular canals to determine their function. This may be done by means of either the turning or caloric tests, named after Barany because he was the first one who correlated experimental findings and clinical observations. A Barany test is indicated whenever there are present spontaneously symptoms referable to dysfunction of the eighth nerve, or whenever in a diagnostic survey it is found desirable to determine the condition of that nerve at its end-organ or anywhere along its central pathway.

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* Read before the Society, March 16, 1938.

The turning test requires a special chair and is mostly adaptable to ambulatory patients. In cases of purulent otitis media with perforation of the drum, however, it is best to do the turning test. The caloric test on the other hand offers two advantages, (1) it can be done anywhere, to the bedridden patient if necessary, and (2) it is applied to only one side at a time, which makes its interpretation somewhat easier. I shall describe briefly the technic in most common usage for the caloric test.

Water at 68°F. is irrigated into the ear of the patient, whose head is held at an angle of 30 degrees forward. In this way only the vertical canals are being stimulated. To stimulate the horizontal canal the head is turned to an angle of 60 degrees backward. In each instance careful note is made of the appearance of nystagmus, vertigo and falling, and the patient is checked for past-pointing. These reactions appear normally in 40 to 60 seconds. The direction, amplitude, and duration of each reaction is carefully noted, for any variation from the normal pattern suggests a different interpretation. Nystagmus resulting from stimulation of the vertical canals is rotary, while that from the horizontal canals is horizontal. Nystagmus and vertigo should be to the opposite side of that being tested, while past-pointing and falling are to the same side. In the normal individual a certain amount of shock develops after stimulation, manifested by pallor, sweating and nausea. Variations in the intensity of these shock reactions are extremely important and should be carefully recorded.

The Lesions

Peripheral lesions are classified as those pathologic or traumatic processes which irritate or destroy the end-organs of the eighth nerve within the labyrinth. In this category are the syndrome of Ménière's disease; purulent labyrinthitis, which is either of otitic origin or secondary to meningitis and usually causes complete destruction of the labyrinth; and toxic labyrinthitis secondary to a focus of infection anywhere in the body or due to the chemical affinity of many commonly used drugs. The differentiation between labyrinthitis and neuritis of the eighth nerve is difficult; any of the toxic factors may involve the nerve fibers themselves or the nerve endings, or both; eighth nerve neuritis must therefore be classified also as a peripheral lesion. As central lesions are classified all intracranial tumors, abscesses, aneurysms or hemorrhages which may affect the eighth nerve directly by pressure anywhere along its course.

The most common symptom of toxic labyrinthitis is dizziness of varying degrees. Associated with this the patient often complains of tinnitus, some deafness, and in severe cases spontaneous nystagmus toward the affected ear and a tendency to fall to the opposite side. The Barany tests in this case often show an irritative reaction; that is to say, nystagmus and vertigo would tend to appear sooner than usual and probably last longer. However, there is a more or less stable relationship among all the various responses; this is a valuable point in differentiating peripheral from intracranial lesions, since in the latter there is usually a great divergence of intensity between the various reactions, and even some may appear normal while others are totally absent. The direction of falling in labyrinthitis is influenced by the plane of the nystagmus. Since by changing the position of the patient's head the plane of nystagmus is changed, the direction of falling is likewise changed. This again is a valuable point of differentiation from intracranial lesions. Falling in the case of a cerebellar tumor, for instance, is due to the impaired coördination of a certain group of muscles; changing the position of the head in this case in no way alters the direction of falling. The shock reactions of pallor, sweating and nausea are greatly exaggerated in labyrinthitis, and even vomiting is common.

In the initial stages of purulent labyrinthitis the picture is much like that just described. In some cases resolution may take place without much permanent damage; more commonly, however, a "dead" labyrinth is the end-result. The direction of nystagmus is toward the infected ear during the acute stage, but this changes toward the sound ear later, due to the unopposed action of that labyrinth. Hearing is completely destroyed. With time the nystagmus disappears altogether and the patient's disequilibrium becomes fully compensated. Purulent labyrinthitis is almost always secondary to otitis media, and because of the intimate anatomic relationship with the meninges a terminal meningitis is quite frequent.

The causes of toxic labyrinthitis are numerous. It may follow the absorption of toxins from chronic foci in the gastrointestinal tract, the gallbladder, the kidneys, the teeth, the nasopharynx and the sinuses. It may be due to the selective affinity of nicotine and alcohol or to such commonly used drugs as quinine and salicylates. It is often associated with such acute infectious fevers as mumps, scarlatina, and diphtheria or with chronic diseases such as syphilis. Many of these toxins exert but a temporary influence on the labyrinth and leave no permanent damage. The cumulative effect of frequent recurrences, however, results in at least partial damage of the labyrinth.

There are many cases of acute toxic labyrinthitis which are probably diagnosed as Ménière's disease. Since the true cases of Ménière's disease are so similar to toxic labyrinthitis, and since actual hemorrhage into the labyrinth is well-nigh impossible to prove, it would probably clear up much of the present confusion if the term "Ménière's syndrome" were to be applied to all cases in which the symptomatology of the attacks and their tendency to recur follows the established pattern.

In general, it may be said that the presence of lesions affecting the central pathways may be suspected whenever the following signs and symptoms are present: vertical nystagmus, either spontaneous or after stimulation; spontaneous past-pointing, the direction of which cannot be changed by douching; falling in a given direction regardless of the position of the head; normal hearing but impaired responses from any canal; disproportionate nystagmus, vertigo and past-pointing from the various canals.

In infratentorial lesions there is a fairly constant absence of shock reactions after stimulation, which is in marked contrast to the usually exaggerated shock found after stimulation in supratentorial lesions. Tumors in the cerebellopontine angle, as a matter of fact, follow a pattern of vestibular responses so constant that when it is found to be present the diagnosis is made, even in the absence of other neurologic signs. Briefly, the syndrome consists of a total lack of response on the side of the lesion including total or subtotal deafness, and impaired reactions from the vertical canals of the opposite side. The larger the tumor the more complete is the above syndrome. Whether the lesion is an acoustic neuroma, meningioma, etc., makes no difference as long as it impinges on the fibers of the eighth nerve.

The larger tumors cause pressure on so many structures that the diagnosis can be made readily without a Barany. In these cases the test is simply another procedure, but one which confirms the diagnosis beyond all reasonable doubt. It is in the smaller tumors, however, that the test is particularly valuable, since often the syndrome is present before other neurologic symptoms have appeared. In fact, the patient's only symptoms may be deafness and vertigo, and the otologist is therefore often the first physician to be consulted. It behooves us, therefore, to constantly bear this fact in mind and sharpen our suspicion early enough to improve the patient's prognosis.

Tumors of the cerebellum affect the coördination of muscle action to such an extent that they are quite easily diagnosed without a Barany. Here again, however, the Barany is found to be of considerable help. There is usually some function in both eighth nerves; but vertigo and past-pointing are diminished on the side of the lesion, and shock reactions are absent. Lesions near the vermis produce a poor pelvic girdle reaction. Since the cerebellum controls muscular functions on the same side of the body, the lesion will be homolateral to the muscular weakness.

In general, tumors above the tentorium are much more difficult to diagnose by means of the Barany tests. There is a tendency for the shock reactions to be markedly exaggerated, however, which, coupled with any of the suggestive signs described above, would lead us to suspect strongly the presence of a supratentorial lesion. The localization, however, can not be made except with the aid of a complete neurologic examination. Multiple sclerosis by its very nature gives a confusing Barany picture; the diagnosis is only helped in a negative way through a process of elimination.

Cerebral vascular accidents so common in arteriosclerosis often influence the vestibular tract and produce considerable vertigo. The vertigo so commonly associated with cases of eye muscle imbalance is an interesting reflex phenomenon; vestibular reactions would be normal, and this finding should make us suspicious of the true cause of the vertigo.

Since only the fibers from the horizontal canals have been demonstrated histologically, much of our present knowledge of the vestibular nerve is theoretical; yet it is based upon the correlation of clinical signs and symptoms and the findings at operation or autopsy. As time goes on and neurologic researches supplement our present knowledge, many explanations will be found for the apparently confusing pictures with which we are often confronted. But even in the light of our present knowledge enough information can be gained by means of the Barany tests to warrant their inclusion in the diagnostic procedures of the otologist and neurologist.

(*Continued from page 186*)

evidence of renal damage which could be attributed to sulfanilamide therapy in this group of patients.

A dermatitis resulting from sulfanilamide therapy has been noted in 1 per cent of the patients in this group. The rash is generally of a "measly" type. If a rash develops it is generally wise to discontinue the sulfanilamide.

Simple fever due to sulfanilamide has been the most common toxic reaction (6 per cent) noted in our patients. In all instances but one this fever occurred after the patient had been afebrile for some days, so that the recognition of this toxic manifestation has presented no especial difficulties. Fever has been noted upon all days of therapy up until the fourteenth day in patients being treated with sulfanilamide. When the drug fever is noted sulfanilamide should be discontinued.

Anemia has been a fairly common toxic manifestation in the patients reported in this group. Fortunately, the majority of these anemias have been mild and slow in developing. A fall of 10 to 20 per cent in hemoglobin is not uncommon in the course of sulfanilamide therapy and does not constitute a contraindication to further treatment.

Acute hemolytic anemia occurring during the first 3 days of therapy and characterized by sudden drops in hemoglobin and red blood cells, a moderate to a marked leukocytosis, marked reticulocytosis, bilirubinemia, urobilinuria, and in certain instances porphyrinuria have occurred in 2.4 per cent of the adult patients and in 8.4 per cent of the juvenile group who have been treated in the Johns Hopkins Hospital with sulfanilamide (personal communication from Dr. W. Barry Wood). These anemias constitute a most serious toxic manifestation. Sulfanilamide should be discontinued if they develop. Transfusions may be necessary. Second attacks of acute hemolytic anemia occurred in 3 of 4 patients who were started on a second course of sulfanilamide following recovery from an original attack of this toxic manifestation.

Agranulocytic angina has occurred in 2 patients who have been treated with sulfanilamide in the Johns Hopkins Hospital. Both individuals recovered from this toxic manifestation. Sulfanilamide should be discontinued if there is evidence of development of a true leukopenia.

In summary, one may say that a detailed observation of the patient, careful temperature recordings, and a daily hemoglobin and total white blood cell count are extremely important in the care of an individual who is being treated with sulfanilamide. If such a routine is adopted toxic manifestations will be recognized in their inception and no great harm will come to the patient.

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AN INVESTIGATION

It is lamentable that the Department of Justice considers it necessary to make an inquiry to determine whether the American Medical Association and the Medical Society of the District of Columbia have been acting in restraint of trade and contrary to public policy in their methods of attempting to expose the dangers of such organizations as the Group Health Association, Inc. In view of the fact that the legality of that organization has been seriously questioned on two important points one might suspect prejudice on the part of those government officials who propose to investigate the activities of the time-honored Medical Society of the District of Columbia without at least determining the legal status of the new government-bureau-sponsored Group Health Association, Inc. As a matter of fact, however, the Medical Society of the District of Columbia is quite willing and even desirous of an investigation, provided only that it is fair, unbiased, and not made with any desire to intimidate. Perhaps such an investigation would present opportunities to bring to light adequately the basic issues involved in the controversy, so much publicized in a way to discredit the organized medical profession.

The deplorable factors in the proposed investigation are that it is to be instituted on the premise that the practice of medicine is a "trade" and that the Medical Society may have been acting against the public interest. The Society can in no sense be likened to a trades union, and actually it has been attempting to the best of its ability, if not always wisely, to protect the public against a type of medical practice that extensive experience in other countries has shown to be faulty. Certain principles and standards have been accepted by the Society under the leadership of a most representative and democratic national organization as the foundation of all good medical practice, and any member of the Society who openly disavows these principles and standards is subject to intramural disciplinary action and even expulsion from membership as set forth in the Constitution and By-laws of the Society. Is there any Society which does not have the privilege of such control over its members?

The Medical Society of the District of Columbia is not a number of tradesmen banded together for the purpose of securing the highest wages for their services. It is essentially an organization for the advancement of its members in the scientific aspects of medical practice; but in recent years it has been forced to study the socio-economic aspects of medical practice for the purpose of attempting to make it possible for all persons to secure adequate medical care, largely because the scientific progress of medical practice has increased the benefits obtainable and consequently their cost.

If the Society honestly believes that some form of medical practice is fraught with the danger of lowering the standard of practice, is it not its obvious duty so to inform the public? Unfortunately the Society's stand in the matter of the present controversy has not been fairly placed before the public, and the Society has been made to appear as if acting solely in the interest of its members and even objecting to progress in the distribution of "adequate" medical care. Detailed explanations of the dangers of "health insurance," "socialized medicine," and "coöperative medicine" have been made from time to time in the Annals, at public gatherings, and over the radio. These will not be reiterated at this time.

Suffice it to say that the Society is seriously studying the problems of distribution of medical services in the hope of evolving with the aid of lay groups a relatively innocuous solution, one that will enhance rather than retard medical progress and that will at least not lower the standard of medical practice in the United States, which though far from perfect is nevertheless the highest in existence.

TRANSACTIONS OF THE WASHINGTON SOCIETY OF PATHOLOGISTS

The meeting of the Washington Society of Pathologists was called to order at 1:30 P.M., Saturday, May 7, 1938, in the Army Medical Museum, by the President, Dr. Oscar B. Hunter. There were 12 members and 2 guests present.

The following officers were elected: Dr. J. W. Lindsay, President; Dr. H. E. Ragle, Vice President; Captain Elbert DeCoursey, Secretary-Treasurer; and Dr. Oscar B. Hunter, 1-year Councillor. Dr. Eugene R. Whitmore will complete the 2-year term as Councillor.

The following resolution was adopted by the Society:

> "Be it Resolved, That the Washington Society of Pathologists, Inc., recognizing the importance of the vast amount of material and literature in the Army Medical Museum and Army Medical Library to the medical profession of the Country, and recognizing the inadequacy of the present building and facilities properly to care for this invaluable material, does earnestly urge the passage of Senate Bill 3919 and House Bill 10455, that provides for the erection of a new structure in Washington to house the Army Medical Museum and Library.
>
> "And be it further Resolved, That this resolution be forwarded to Senator Morris Sheppard and to Representative A. J. May."

Presentation of Cases

Colonel F. H. Foucar presented the case of a soldier, aged 31 years, who was admitted to Walter Reed General Hospital, February 12, 1938. The patient stated that he had been drinking a pint of whiskey a day 2 or 3 times a week until abstinence during the past 2 weeks. His father was in a State Hospital in 1908 for alcoholic insanity. His mother was thought to be an alcoholic. His mother took him to the Massachusetts Society for Prevention of Cruelty to Children Temporary Board of Charity, December, 1908. In October, 1918, he was placed in the State Infirmary in Tewksbury on complaint of attendance officer, for observation; he escaped in April and was returned a few days later. He was committed to the Department of Mental Diseases in December, 1922. He got along quite well but was inclined to be egotistical. His tonsils and adenoids were removed in December, 1923. His singing voice was very good, and he took part in many entertainments; he was fond of dressing up and was very neat. He worked with a painting group for 4 years and was then transferred to a construction group. He escaped from the School, March 18, 1928, and was discharged from escape, July 13, 1931. Mental examination at Wrentham School, January 23, 1928, was as follows: Chronological age, 21 years, 10 months; mental age, 10 years, 2 months. I. Q. 0.64; classification: Moron. Stuttered quite a bit; able to reason a little. Wassermann test negative, January 8, 1923. A letter from the Family Welfare Society stated patient enlisted in Army when he escaped from Wrentham. He has had 6½ years service, 4 of which were in Hawaii. Present Illness: While on guard duty at Fort Devens, Massachusetts, about January 10, 1938, he had a sudden sharp severe pain in the forehead extending to the back of his neck; next morning he was given symptomatic treatment at sick call and the pain subsided for the time being. The pain kept returning, however, and was especially severe in the morning. On January 30, 1938, roentgenograms of the sinuses showed cloudiness of the right frontal and ethmoid sinuses following a purulent discharge from one side of the nose. On February 2, 1938, the patient was too sick for treatment, became very pale and fainted, with cold clammy skin and moderately dilated pupils. He recovered consciousness after a moment or two and complained of violent headache and extreme generalized weakness. On February 6, 1938, he had a similar attack. He was transferred to Walter Reed General Hospital, February 12, 1938, with a diagnosis of sinusitis, acute, suppurative, right ethmoid and right frontal sinuses, cause undetermined. His temperature was 98°F. The general examination was negative. There was a purulent secretion from each middle meatus; the septum deviated to the left; the sinuses moderately hazy. The blood pressure was 152/100. The pupils reacted to light and accommodation, but sluggishly. On admission the hemoglobin and red blood cell count were normal, but the white blood cells numbered 23,800 with 90 per cent polys. All other laboratory tests were negative. On February 12, 1938, roentgenograms showed haziness of the frontal sinuses, more evident on right. In the region of the ethmoids and nasal passages there was marked haziness; but there was only slight haziness over the maxillary sinuses. On February 28, 1938, a lateral X-ray film of the skull showed the area of the sphenoidal sinuses completely obscured by a shadow; immediately above and in front of the sphenoidal sinuses was a circumscribed area of bone density; this area was in the floor of the skull immediately in front of the anterior clinoid processes; the sella itself was small and of closed type; the pineal gland was calcified and in normal position; the vault of the skull had a slightly granular appearance. On February 14, 1938, he continued to complain of severe headaches, without relief from medications, and extreme weakness. He was afebrile throughout hospitalization. He was found dead in bed at 6 A.M., March 10, 1938. He was last seen alive at 3 A.M., when he went to the bathroom. At bedtime he had been seen by two officers and was apparently in good condition and had no complaints. One pathologist has called this a benign spongy osteoma of the sphenoid. I have called it osteitis fibrosa, but what caused it I do not know. There is a question of Paget's disease. This is the first time I have seen a thing like this.

In the discussion, **Dr. L. L. Madsen** said that this was a peculiar situation. In young animals we have a condition, principally in cattle, in which Vitamin A deficiency results in atrophy of the optic nerve and atrophy occurs where the nerve passes through the optic foramen. The question is whether these changes are due to proliferation of bone with consequent atrophy of the nerve. With an individual who has shifted about a good deal and who has been more or less addicted to drink, the dietary habits are not very regular. Such a condition might be the result of an early Vitamin A deficiency. The deficiency probably did not exist at the present time, but as you know lesions of the nerves with complications such as this do not necessarily improve with therapy. At the present time his epithelial membranes were apparently all normal, and you are sure he was not suffering from Vitamin A deficiency now.

Dr. Walter Freeman said that the cerebellum seemed to have a hemangioblastic type of meningeoma, a tumor formation which could be associated with this over-development of bone in the region of the base of the skull. It would be interesting to study some sections of the hypothalamic area.

Drs. Walter Freeman and **J. W. Lindsay** presented a case as follows: Funicular myelopathy or subacute combined degeneration of the spinal cord is a common complication of pernicious anemia, and the symptoms sometimes precede the development of the anemia or persist after the blood picture has returned to normal under liver therapy. If the condition has not progressed far considerable improvement in the symptoms may occur particularly in the subjective ones since many of the phenomena are due to involvement of the peripheral nerve. It is not to be anticipated that the spinal cord changes will undergo much alteration, although even so the powers of compensation of the individual may result in considerable improvement of the ataxia and spasticity. When the condition has progressed, however, to the point of atrophy, very little can be done.

The patient was a white woman, 66 years of age, who had had difficulty in walking, with numbness of the lower limbs for about 3 years preceding death. She complained of paresthesias and incoördination of the hands, difficulty in writing, sewing and so forth, but no actual pain. Constipation and dysuria followed early in 1936 with a disagreeable girdle sensation and jerking of the lower limbs at night. There had been no indigestion. In fact, she had gained 15 pounds in 2 months. In 1933 the patient's blood count was normal, but in August, 1936, the blood count showed 2,400,000 red cells and 48 per cent hemoglobin. There was no free hydrochloric acid in the gastric contents, and except for the neurologic examination her condition was normal.

Examination revealed some pallor and a smooth, reddish tongue, atrophic at the edges. There was marked ataxia in the upper limbs, with disturbance to vibratory sensibilities. The lower limbs were weak and completely ataxic. Ankle clonus was found on the right and a positive Babinski sign on both sides. Sensibility to pin prick was normal. Vibratory sensibility was lost below the rib margin and the sense of position was extremely defective in the lower limbs.

Under liver therapy pushed by Dr. Carl Goldenberg, the red blood cells rose to 4,500,000 by November 10, 1936, and the hemoglobin was 85 per cent. Subjectively the symptoms subsided, but there was no improvement in the objective findings. The patient remained bedridden and died about March 8, 1938, before which time there had been considerable mental deterioration.

Autopsy revealed an exceptionally atrophic spinal cord with vast areas of myelin destruction and gliosis in the posterior and lateral columns, marked atrophy of the ventral roots of the lumbar region, and a great reduction in the number of ventral horn cells. No areas of demyelination were found in the cerebrum.

Captain Elbert DeCoursey presented the case of a 56-year-old negro male, who had been struck in the right eye with a piece of wood. It became inflamed and the sight was lost. The left eye had been sore for 3 weeks, and blind for 1 week. The right cornea was nearly opaque. The globe was smaller than normal. A heavy ring of pigment appeared on the anterior capsule when the iris was dilated. The diagnosis was rupture of the globe at the sclera from a blow with a blunt piece of wood, apparently not perforating, resulting in uveitis. The right eye was enucleated.

Microscopically there was a full-blown uveitis of sympathetic ophthalmia with the typical nodules which are composed of an outer ring of lymphocytes encircling a focus of epithelioid cells and giant cells which contain pigment.

In the discussion it was noted that the tubercles of tuberculosis, syphilis and sympathetic ophthalmia very closely resemble each other. One thing that differentiates from tuberculosis and syphilis is that in sympathetic ophthalmia every epithelioid or giant cell has pigment in it. In the iris, it usually starts in the posterior portion and almost never breaks into the anterior chamber, whereas tuberculosis almost always grows into the anterior chamber. Sympathetic ophthalmia almost always extends behind the iris; tuberculosis may do that, but it is not the usual thing. Tuberculosis usually spreads from one tract into another one, that is, uvea into the retina.

Dr. Vincent J. Dardinski presented the gross specimen of a spleen from a 55-year-old white man. The spleen was removed about 7 months before, having been sent in from a country hospital. The man had been in India 20 years before. There was a history of progressive enlargement of a mass in the left side of 4 years' duration, which was eventually diagnosed as an enlarged spleen. Up until the time this doctor saw him he had never had a blood count. The red blood count was 2,500,000; the white blood cells numbered 3,600. Because of the progressive enlargement of the mass and increasing weakness, he decided that he wanted the mass removed. Gross examination showed a large, hard spleen which on section was markedly fibrotic and showed masses of iron pigment.

In the discussion moderate focal necrosis of the spleen was noted. The very complicated picture which may be due to the longevity of the process now masks the etiologic agent.

Dr. Dardinski presented a second case of a white woman, aged 50 years, who came into the hospital with a preoperative diagnosis of cancer of the stomach. The lower third of the stomach was resected; the surgeon reporting a very extensive carcinoma involving the wall. There was an ulcer in the mucosa, and the wall which was resected; this was very soft and did not have the appearance grossly of a carcinoma. Microscopic sections of the tumor showed numerous round cells suggesting a neoplastic process.

Dr. George Tolstoi presented the case of a white woman, aged 72 years, who discovered a painless mass in her abdomen about a month prior to admission to the hospital. There was hardly any pain or discomfort. On examination of her abdomen it appeared to be somewhat enlarged. Liver and spleen were not palpable at operation. A large highly vascular, infiltrating, fixed tumor mass, the size of a large grapefruit, was found in the mesentery of the small intestine. It was grayish white, solid, friable, and on section cut easily. It had the appearance of secondary neoplastic growth with considerable necrosis. There was studding of the superior surface of the bladder with numerous small shotty nodules the size of peas. Microscopic examination suggested lymphosarcoma.

The meeting adjourned at 3:30 P.M.

NEWS AND PERSONALS

American Congress of Physical Therapy will hold its Seventeenth Annual Scientific Session, meeting conjointly with the American Occupational Therapy Association, September 12–15, 1938, at the Palmer House, Chicago. There will be papers, clinical conferences and extensive scientific and technical exhibits. The meetings will be immediately preceded by an Instructive Seminar. Permanent headquarters: American Congress of Physical Therapy, 30 North Michigan Avenue, Chicago, Illinois.

George Washington University Medical Society, at a meeting held on May 21, 1938, elected the following officers: Drs. Oscar B. Hunter, *President;* Arnold McNitt, *Vice President;* Leslie H. French, *Secretary;* J. Burton Glenn, *Treasurer;* Charles S. White, *Advisory Council.*

A constructive and progressive schedule of scientific programs is assured for the 1938–39 session.

The Osler Society held its annual outing at Virginia Beach, Va., May 20–23, 1938. Among those who attended were Dr. Allan E. Walker, Jr., Chairman, Committee on Arrangements; Drs. S. A. Alexander, Harry F. Anderson, Montgomery Blair, Jr., Jeter C. Bradley, F. J. Eichenlaub, James N. Greear, Jr., Charles P. Howze, John H. Lyons, E. M. McPeak, R. Massie Page, Arch L. Riddick, Fred R. Sanderson, M. A. Selinger, J. J. Shugrue.

Pan American Medical Association, Washington, D. C. Chapter, held a well-attended meeting on the evening of May 15, at the Congressional Country Club, Dr. Custis Lee Hall, Vice President of the Association, acting as host. Over 100 physicians attended.

The Program:

1. "Gunshot Wounds of the Chest." Carnes Weeks, M.D., Attending Surgeon, Bellevue Hospital, New York.
2. "Quest of the Uros—Remnants of a Once Numerous Tribe—The Oruwaks of the Amazon—Cuzco—Bull Fight—Romerio of Copacabava—Five Day Indian Fiesta in Bolivia." Harry Wright, M.D., Philadelphia.

In the absence in Mexico of the President of the Chapter, Dr. F. Castillo Nájera, the President-elect, Dr. Augusto S. Boyd, presided at the invitation of the Acting President, Dr. James Alexander Lyon.

Diabetic Camp for Children. In view of the success of the Diabetic Camp for Children at the Christ Child Society Farm for Convalescent Children in 1937, the Society has agreed to sponsor the Diabetic Camp during the coming summer. There will be accommodations for white diabetic children of limited means, between the ages of 6 and 12 years. The camp will be operated during the month of August. Patients will be under the care of physicians and nurses experienced in the treatment of diabetes mellitus. Children admitted to the camp will be continued on the same treatment as outlined by referring physicians if they so desire and they may follow the progress of their patients while at the Farm. Physicians desiring to send diabetic patients to the camp should obtain application blanks from Dr. Robert A. Bier, Attending Physician, The Christ Child Society, 608 Massachusetts Avenue, N. E., Washington, D. C.

Immunize Your Pre-school Child Now. The best season in the year to immunize the pre-school child against diphtheria and smallpox is early summer. Do it now. The foregoing appears as a caption of a bulletin arranged by Dr. J. A. Murphy, Chief, School Medical Inspection Service, District of Columbia Public Schools, under the authority of Dr. George C. Ruhland, Health Officer. In continuing, it is stated:

> "The majority of the common contagious diseases have their minimum period of prevalence during the summer months, as follows: July and August, scarlet fever, diphtheria, influenza, colds and grippe; July, August and September, lobar pneumonia; August to November, measles; August and September, chickenpox. There are at least three exceptions:
>
> 1. Whooping cough usually has its lowest incidence in September and October, with maximum prevalence in June.
> 2. Infantile paralysis usually has its maximum prevalence in September, cases beginning and gradually increasing during July and August.
> 3. Infections spread from the intestinal tract such as typhoid (maximum June, July and August), and acute intestinal irritation with diarrhea, are also prevalent during the warmer months, but these are being increasingly prevented or kept under control by careful milk, water and food sanitation, proper sewage disposal, and higher standards of personal hygiene and cleanliness.
>
> It is evident from the above facts that during the summer the individual and his environment are best suited for immunization procedures and there is less chance of complication by infection or illness. It is also true that immunity against diphtheria is gradually acquired and is not complete until several months after the injection, so that early summer immunization gives the whole vacation period in which to acquire full protection."

Although this bulletin is addressed to the layman, the Doctor should take due cognizance, to the end that preventable diphtheria and smallpox cause no further morbidity.

CONTAGIOUS DISEASE REPORT

Health Department, District of Columbia

MAY, 1938

	Morbidity	*Mortality*
Typhoid fever	6	0
Typhus fever	0	0
Smallpox	0	0
Measles	66	1
Scarlet fever	71	0
Whooping cough	32	0
Diphtheria	29	0
Influenza	3	3
Poliomyelitis	0	0
Encephalitis-lethargica	0	0
Epidemic cerebrospinal meningitis	2	2
Tuberculosis (all forms)	102	46
Syphilis	544	12
Chancroid	5	0
Gonorrhea	437	0
Chickenpox	104	0
Pellagra	0	0
Pneumonia (all forms)	84	37

Mr. Theodore Wiprud on June 1 began his duties as Executive Secretary. On the evening of June 3 at a special meeting he was formally introduced to the members and their wives, and the members of the Woman's Auxiliary. A buffet supper with a pleasant social evening followed the meeting. Dr. Thomas E. Neill, the President, introduced Mr. Wiprud to those in attendance.

Dr. Tom A. Williams gave a summer course to graduates on Mental Hygiene at Duke University. He will open the discussion of "A Method of Instilling Mental Hygiene by Means of Examples from General Literature," at Cambridge University, August 17.

Convention Flashes

American Medical Association, holding its eighty-ninth Annual Session in San Francisco, June 13–17, 1938, had approximately 7,000 registrants. The following members of the Medical Society of the District of Columbia were in attendance:

Edward W. Burch
John W. Burke
Read N. Calvert
Arthur C. Christie
Coursen B. Conklin
William DeKleine
F. J. Eichenlaub
Everett M. Ellison
Joseph F. Elward
Walter Freeman
Louis S. Greene
Henry B. Gwynn
William P. Herbst
Oscar B. Hunter
M. W. Ireland
Kate B. Karpeles
Elizabeth Kittredge
Lee McCarthy
Henry Cook Macatee
Margaret M. Nicholson
Robert C. Ransdell
Mark P. Schultz
Willard B. Walters

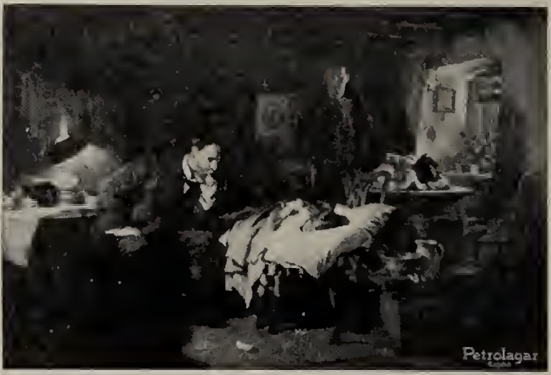
Drs. Margaret M. Nicholson and Coursen B. Conklin attended meetings of the American Academy of Pediatrics, June 9–11, 1938, held at Del Monte Hotel, Del Monte, California. Dr. Nicholson acted as Secretary to the Section on Child Psychiatry.

Drs. F. J. Eichenlaub and Lee McCarthy were present at meetings of the American Dermatological Association, held concurrently.

Dr. Oscar B. Hunter, President of the American Therapeutic Society gave a dinner at the Sir Francis Drake Hotel on Tuesday evening, June 14, complimentary to the American Therapeutic Society's officers and guests. Present were: Mrs. Hunter, Dr. Joseph F. Elward, Secretary, American Therapeutic Society, and Mrs. Elward; Dr. Henry H. Turner, Oklahoma City, Oklahoma, Treasurer, American Therapeutic Society; Dr. Francis M. Pottenger, Monrovia, California, Past President, American Therapeutic Society and American Society for the Study of Internal Secretions; Dr. Alphonse McMahon, St. Louis, Mo., Past President, American Therapeutic Society; Dr. Roy R. Kracke, Atlanta, Georgia, Past President, American Society of Clinical Pathologists, and Mrs. Kracke; Dr. C. W. Maynard, Pueblo, Colorado, President, American Society of Clinical Pathologists; Colonel and Mrs. Raymond O. Dart, formerly of Washington, now of San Francisco; Dr. and Mrs. H. C. Macatee; Dr. F. M. Peterson, Butte, Montana; Dr. E. Sterling Nichol, Miami, Florida; Dr. Louis F. Bishop, Jr., and Dr. A. Wilbur Duryee, of New York City; Dr. Coursen B. Conklin.

Dr. Henry C. Macatee, member of the House of Delegates, was appointed to the important Reference Committee on Legislation and Public Relations.

Sculpticolor of Fildes' Masterpiece is now in a permanent home in the Rosenwald Museum. This $150,000.00 reproduction of Sir Luke Fildes' masterpiece "The Doctor," first shown by the Petrolagar Laboratories at Chicago's Century of Progress Exposition in 1933, was recently presented by its owners to the new Rosenwald Museum of Science and Industry in that city. Following the two World's Fairs, "The Doctor" Exhibit went on a tour of 50,000 miles and was viewed by over 5,000,000 people in 18 principal cities throughout the country. Designed to remind the public of the importance of the family physician, it required the full time of the late Chicago sculptor, John Paulding, and the noted artist, Rudolph Ingerle, with a large corps of assistants, taking nearly a year to complete. In its new location in the Rosenwald Museum it will be seen by millions of visitors annually.



THE DOCTOR

Francis McQuillan, M.D.
(1877-1938)

Dr. Francis McQuillan, an Active Member of the Medical Society of the District of Columbia, his original membership dating from February 25, 1909, who for years was chief obstetrician at Providence Hospital, died on June 10, 1938, at Providence Hospital, following a brief illness. He was born at Providence, Rhode Island, September 17, 1877. His premedical education, which was followed by graduation in medicine at Georgetown University in 1903, was obtained at Holy Cross College, Worcester, Mass. He served as resident physician at Providence Hospital, 1903–1904, and for a number of years taught in the Nurses' Training School. In his organization memberships were included: Knights of Columbus, Washington Lodge of Elks, and National Capital Field Trial Club. Dr. McQuillan is survived by his widow, Mrs. Mary L. McQuillan; two sons, Francis and Joseph McQuillan; and two daughters, Mary and Teresa McQuillan. Funeral services were held in Saint Peter's Catholic Church, with interment in Mount Olivet Cemetery, June 13, 1938.

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THE CUT TENDON

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Any wound occurring about the forearm or hand that has completely severed the true skin should be investigated to determine if the underlying tendons have been lacerated. This investigation should be carried out regardless of the size of the wound or the reluctance of the patient to perform the necessary movements. Sometimes a wound not over an eighth of an inch in length will be deep enough to sever one or two of the underlying tendons, and this is particularly true in the region of the fingers where these organs become superficial and are only separated from the skin by their sheaths and the subcutaneous tissue. The simplest test to determine if the continuity of a tendon has been interfered with is to have the patient forcibly flex and extend the fingers. If the underlying tendons have not been severed, a tight fist or the complete extension of the digits should be accomplished with ease. If there is a lagging of any of the fingers when these motions are executed, the tendon to that digit should be investigated before the wound is closed. A good way to determine exactly what tendon has been cut is to restrict motion at one joint of the finger while movement of the other joint is attempted. In the fingers exclusive of the thumb, flexion of the distal phalanx of any of the fingers should be accomplished with ease when motion is restricted at the interphalangeal joint. If this motion cannot be performed by any finger, the flexor digitorum profundus tendon has been severed. When motion at the distal phalangeal joint is restricted, flexion at the interphalangeal joint is accomplished by the flexor digitorum sublimis muscle through its tendon. When this tendon has been severed, motion at this joint cannot take place.

In suspected injuries to the extensor tendons of the fingers, it is a little more difficult to determine exactly what tendons have been lacerated, since the action of extension is more complicated than that of flexion, and the location of the wound will largely aid in determining what tendons have been injured. Extension of the metacarpophalangeal joints is accomplished solely by the action of the extensor digitorum communis except in the index and little fingers, where this motion is aided by the extensor indicis proprius and the extensor digiti quinti, respectively. But these tendons chiefly have as their function to move the index and little fingers away from the midline of the hand. Extension of the interphalangeal joints and the distal phalangeal joints is also largely accomplished by the extensor digitorum communis, but the widening of the tendons of the lumbrical muscles over the dorsum of the fingers in the region of the interphalangeal joints also aids in accomplishing this motion. It is therefore evident that wounds occurring at the wrist on the extensor surface of the hand would not involve the digitations of the lumbricals. However, along with cutting the common extensor tendons they may involve the extensor indicis proprius and the extensor digiti quinti, but laceration of these tendons can definitely be determined by testing the power to move the index and little fingers away from the midline of the hand. When a wound occurs on the extensor surface of the fingers distal to the metacarpophalangeal joint and the power of extension is lost to any of the digits, the probability is that both the extensor digitorum communis and the digitations of the lumbricals have been severed.

The thumb has to be examined independently of the fingers, since its motion is not controlled by any muscles common to the fingers. When the metacarpophalangeal joint of the thumb is held firmly, flexion of the distal phalanx is accomplished by the flexor pollicis longus. When motion of the distal phalanx is restricted, the thumb is flexed at the metacarpophalangeal joint by the flexor pollicis brevis, which arises on the thenar eminence and is inserted by a small tendon, not over a half inch long, on the proximal end of the first phalanx of the thumb. The extensor motion of the thumb is controlled by two long tendons, the extensor pollicis longus and the extensor pollicis brevis. These tendons form the boundaries of the "anatomical snuff box," the tendon of the brevis lying on the radial side, while that of the longus forms the ulnar boundary. The tendon of the extensor pollicis longus extends the distal phalanx of the thumb when the metacarpophalangeal joint is prevented from moving. The extensor pollicis brevis extends the metacarpophalangeal joint of the thumb when motion of its distal phalanx is restricted. When cut, these two tendons because of their length will retract a great distance up the forearm, and extensive dissection will sometimes be necessary to locate them.

When dealing with any wound in which there is a possibility of a tendon injury, it must not be forgotten that the loss of function present may be due to a laceration of one of the innervating nerves. Here again, the location of the wound will aid in making a differential diagnosis. If the wound is in the lower third of the forearm, laceration of the median, ulnar or radial nerves will not influence the action of the tendons of the muscles arising in the forearm, since these large muscles receive their innervation in the middle and upper thirds. The small muscles of the hand, however, are controlled by the median and ulnar nerves, and laceration of these nerves at any point along their course will be followed by paralysis of these muscles. The ulnar nerve controls the power to abduct and adduct the fingers through its innervation of the interosseus muscles. It also controls adduction of the thumb by innervating the adductor pollicis and the power of approximating the little finger with the thumb by supplying nervous control to the opponens digiti quinti which lies on the hypothenar eminence. The median nerve controls the power of approximating the thumb with the little finger through the opponens pollicis and also the power of flexion of the thumb at the metacarpophalangeal joint through the flexor pollicis brevis. The abductor pollicis, which controls abduction of the thumb and helps to form the thenar eminence, is also supplied by the median nerve. The lumbrical muscles, whose function aids in flexing the metacarpophalangeal joints and extending the interphalangeal joints of the fingers are controlled by both the ulnar and median nerves. The median nerve supplies the lumbricals of the index and middle fingers, and the ulnar supplies the lumbricals of the little and ring fingers.

A careful investigation of the action of these muscles should be performed with every case of deep lacerations to the hand or forearm. If it is not performed a nerve injury will often be overlooked and an otherwise excellent tenorrhaphy will be marred by restriction of motion of the small muscles of the hand. In passing, it may be said that the radial nerve controls all the extensor muscles of the forearm along with the triceps in the arm, and that laceration of it above the elbow is followed by wrist-drop and cutaneous sensory paralysis on the dorsum of part of the forearm and hand; but it exerts no nervous control over any of the flexor muscles or the small muscles of the hand.

Having definitely determined what tendons and nerves have been injured, the operation for their repair should be performed without delay except when acute infection of the wound is evident. The argument for delay except where the wound has been produced under the most favorable circumstances is, in my opinion, not good judgment, since all of these wounds are potential reservoirs of infection and should be treated by removing all gross dirt, washing with green soap and water, and by ligating all bleeding points. They should also be treated as major surgical procedures and the patient taken to the operating room, where the technic is more exacting than in the emergency room where the light and instruments are usually better, and where a general anesthetic may be employed if necessary. Another argument against delayed repair is that with the lapse of time the proximal severed ends of the tendons will retract farther and farther up the forearm and the muscle bellies rapidly atrophy when the severed ends are not placed together as soon as possible.

Having arrived in the operating room the preparation of the part is the same as with any other surgical procedure. However, just before the painting of the skin, a tight binder or a blood pressure cuff partly inflated placed about the forearm over the muscle bellies will aid in forcing the proximal severed ends down into the wound by squeezing on the muscles and causing them to relax and elongate. The injection of 1 per cent novocaine solution directly into the muscles will lessen their irritability and also cause them to relax, but the employment of local anesthesia for the entire repair has not proved as satisfactory to me as general narcosis. The novocaine solution, along with keeping the wound filled with a mixture of the fluid and blood which obstructs vision, also adds to the possibility of infection. After the wound has been prepared, the draping should be arranged with the fingers in view so that the operator by applying traction to the distal cut ends of the tendons can determine to what fingers they belong. The wound should then be carefully sponged, all clots removed, and all bleeding points ligated, since good visualization of the operative field will materially reduce the operating time which under the best circumstances is usually prolonged. Another very important reason why careful sponging of the wound is necessary is that after it has been performed any clots remaining are usually lying within the tendon sheaths and will act as guides to the often invisible severed ends, and these clots will therefore reduce the necessity of splitting the sheaths to locate them. The splitting of a tendon sheath is to be avoided whenever possible, since this membrane lubricates the tendon and injury to it is often followed by some degree of obstructing adhesions. However, if the severed end cannot be located by simple examination it is better to enlarge the wound until it is visible through its sheath and then milk it down or split the sheath if necessary, than to blindly probe with a hemostat and grasp anything that comes in contact with it, as is so often done. This blind grasping is fraught with a greal deal of danger not only to the tendon and its sheath but also to nerves that lie in close proximity to the tendons. It often happens that a nerve will be caught in the clamp and its end crushed before it can be differentiated from a tendon. This injury of course will interfere materially with the function of the nerve and will often require the removal later on of any obstructing neuroma.

It is best to locate all the distal cut ends of the tendons before attempting to locate the proximal ends, first because they retract only slightly and secondly because by applying traction to them the operator can tell by watching the movements of the fingers just what muscle groups are involved. Also, by moving the fingers and at the same time watching the wound, he can definitely determine what tendons have been severed and what muscle groups are still intact. As each tendon is located, a stay suture should be placed through it so as to relieve the crushing action of the forceps. This suture is usually of black silk and can be so placed as to act as the first step in the final approximation of the cut ends. After locating all the distal ends, the proximal ends should be isolated and matched with them. If an odd number occurs on either side of the wound a search should be made for the absent end. This will often necessitate further dissection, but such dissection is justified when the function of the hand is involved, and most tendons will function only slightly or not at all when they are attached to the wrong muscle belly. There is only one tendon in the hand whose action can be dispensed with without seriously interfering with the function of the hand. This is the palmaris longus, which has as its function the tightening of the palmar aponeurosis. Even this tendon when it has been severed and not properly repaired will sometimes be followed by a contracture of the fingers not unlike a Dupuytren's contracture.

Having located all the severed ends they should be approximated. Braided black silk is the material most commonly employed. There have been numerous technics advocated for the approximation of the ends of cut tendons. The illustrations present the two most common methods. Figure 1 illustrates how the original anchoring suture, which was inserted at the time the ends were first located, acts as a tension stitch and is used to primarily approximate the cut ends. After this suture is pulled tight and tied, small interrupted stitches are placed close to the wound margin to enhance accurate approximation and to further strengthen the wound edges. Figure 2 illustrates another method of tendon suturing, and in my experience it has proved to be most satisfactory. It is performed with two straight needles threaded on a single piece of black silk. One of the needles is first placed through the tendon about 1 cm. back from the cut edge. Using the same needle a stitch is next made obliquely across and returns obliquely where it emerges at the cut edge. The oblique stitch with the other needle is now repeated and emerges at the opposite margin of the cut edge. These steps are carried out on both the distal and proximal ends of the tendon and the sutures tied, one on either side, the knots being within the substance of the tendon if possible. The ends are further reinforced with small interrupted sutures.

After the tendons have been repaired the sheaths should be closed with interrupted catgut and the skin with any type of non-absorbable interrupted sutures. The extremity is then placed in such a position as to exert a minimum amount of tension on the suture line. When the flexor tendons are involved the position is that of acute flexion. When it is the extensors that have been cut the position is complete extension or hyperextension. It may be necessary sometimes to apply a plaster splint to maintain these positions, but in the ordinary case a gauze bandage reinforced with adhesive tape will suffice.

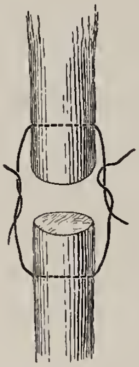

FIG. 1. Simple method of approximation and suture of ends of cut tendon.

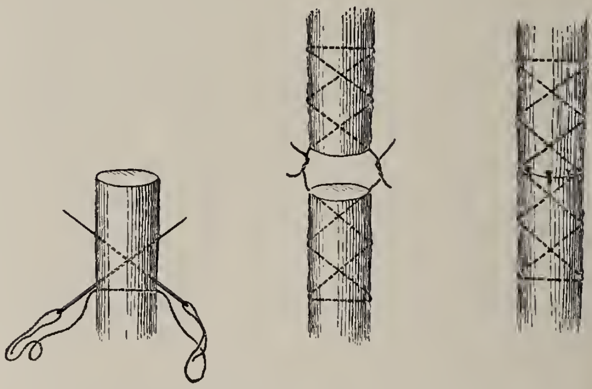

FIG. 2. Very satisfactory method of tendon repair.

The splints should remain in place for a period of 10 days to 2 weeks, after which they should be removed and gentle active motion encouraged. The part should be massaged and baked once or twice a day, and after the third week passive motion should be used to aid in the complete return of function to the part. I should like to emphasize the importance of physiotherapy, active and passive motion. At least 50 per cent of the treatment rests with these procedures being performed intelligently and persistently. The failure of either the surgeon or the patient to coöperate during this period of rehabilitation may result in a partial or complete loss of function of the hand or fingers even though an accurate approximation of the tendons with excellent healing has been accomplished. It has been advocated that active motion be allowed immediately after approximation. This procedure may aid in reducing the period of rehabilitation by preventing obstructing adhesions, but in my opinion it is better to wait and allow some degree of healing to take place before movement is allowed. In many of these injuries some degree of infection takes place, and if the part is allowed to remain quiet it is usually overcome without any serious interference with the healing of the tendon.

THE INTERPRETATION OF CERTAIN CARDIAC SIGNS IN CHILDREN*

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The significance of the systolic murmur at the apex of the heart is one of those perennial subjects of controversy which give medical literature its tremendous bulk. I should not attempt to say more where much has been said, were it not that my experience in the Cardiac Clinic of the Children's Hospital has convinced me that the correct interpretation of the systolic murmur and of certain other of the cardiac signs in children is extremely important. Each year at the Clinic we see a considerable number of young patients whose activities have been seriously curtailed and whose education has been interrupted because a diagnosis of heart disease had been made on the basis of a systolic murmur or of an arrhythmia. Upon a careful physical and laboratory examination of these patients it is found that the children forming one group present no evidence of congenital or rheumatic heart disease, those forming another group have had a single past attack of rheumatic carditis but show no residual signs except a systolic murmur, and those in a third group have slight or relatively unimportant congenital defects. They had all, however, been receiving the same treatment of prolonged rest and restricted exercise which must be carried out when active rheumatic carditis is present.

When a diagnosis of congenital or rheumatic heart disease is made in the case of a child, the parents' apprehensions are likely to establish an anxiety neurosis in him. It is generally recognized that the curtailment of a child's physical activity interferes with his education or occupational training and that it may retard his mental and physical development. It may also lead to a permanent state of inferiority and inadequacy. When this happens to an individual whose cardiac condition is in itself crippling and whose prognosis is poor, it is relatively unimportant; but when the normal development is unnecessarily retarded or a permanent state of inferiority or inadequacy is needlessly produced in an individual who may live to a fairly advanced age, it is extremely unfortunate.

A heart murmur was for a long time accepted as indisputable evidence of a structural lesion of the valves and of an inefficient heart. During the World War this view was disproved. Large numbers of young men having a systolic murmur underwent exceedingly strenuous and prolonged exertion in the Army without harmful aftereffects. In 1922 Parmenter[1] reported that in a series of 506 students who were candidates for Harvard's athletic teams, 53, or over 10 per cent, showed a systolic murmur. Many of these men had poor muscular development because a diagnosis of heart disease had led to curtailment of their activities. These men were kept under observation but were permitted to exercise without restrictions. In numerous instances the murmurs were noticeably diminished or had disappeared after the lapse of 5 or 6 months, and the students' muscular development and general stability, as evidenced by the pulse rate and blood-pressure readings, had improved. Cabot[2] expressed the opinion of many clinicians in 1926 when he stated, "It is now clear that systolic murmurs without other signs of cardiac disease are of no importance as evidence of valve lesions."

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Actuarial facts have not wholly substantiated this opinion. Starr[3] in 1933 analyzed the prognostic significance of the systolic murmur, basing his study upon the results of a joint investigation of the combined experience of most of the life insurance companies of the United States and Canada, covering over 2,000,000 impaired individuals during a 20-year period. In the investigation mortality ratios were computed between the number of actual deaths which occurred among insured individuals in an impaired group and the number of expected deaths among average individuals according to the American Experience Table of Mortality. This table was compiled upon the basis of the mortality experience among 100,000 average individuals through the age range of 10 to 95 years. A group of lives dying at the rate provided for in the table is said to show a mortality ratio of 100 per cent. Starr found that the mortality ratio in a group of 19,220 insured individuals with an inconstant systolic basic murmur in the pulmonic area, not transmitted, was 88 per cent; that is, the actual death rate was 12 per cent less than the anticipated death rate among average individuals (Chart 1). The mortality ratio in a group of 12,063 insured individuals with an inconstant systolic apical murmur was even lower, 79 per cent. But with slight hypertrophy accompanying the murmur the mortality ratio in a group of 1,568 insured individuals rose to 176 per cent; more than twice as high as when only the murmur was present (Chart 2). Among insured individuals with a constant systolic apical murmur, not transmitted, the mortality ratio was 93 per cent in a group of 3,954 who were insured at the standard rate of premium charged individuals who are considered to be normal risks; and 156 per cent in a group of 30,943 who because of physical impairment or occupational hazard were insured at a substandard, or increased, rate of premium. With slight hypertrophy present, in addition to the murmur, the mortality ratio in a group of 4,372 insured individuals rose to 201 per cent (Chart 3). When the constant systolic murmur was transmitted to the left, the mortality ratio was 218 per cent in a group of 107,-

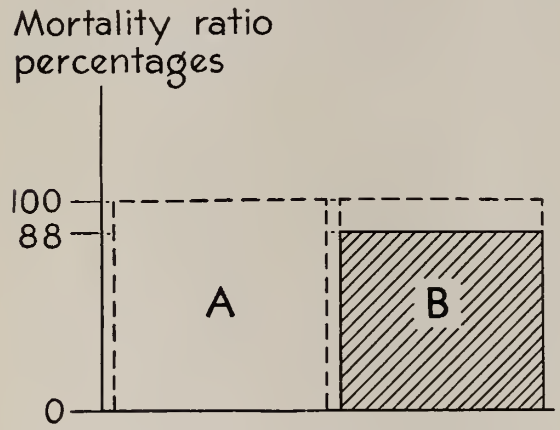

CHART 1. Mortality ratio among insured individuals with an inconstant systolic basic murmur in the pulmonic area, not transmitted. (A) Expected death rate among 100,000 average individuals, according to the American Experience Table of Mortality; and (B) actual death rate in a group of 19,220 insured individuals.

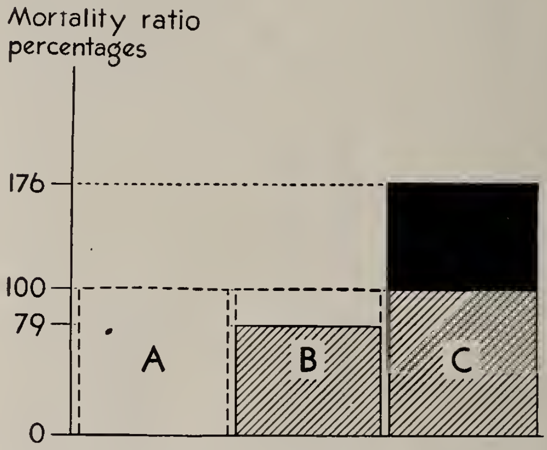

CHART 2. Mortality ratio among insured individuals with an inconstant systolic apical murmur, not transmitted. (A) Expected death rate among 100,000 average individuals, according to the American Experience Table of Mortality; (B) actual death rate among insured individuals in a group of 12,063 individuals without hypertrophy; and (C) in a group of 1,568 individuals with slight hypertrophy.

285 insured individuals engaged in light work, and 293 per cent in a group of 11,349 persons engaged in heavy work. When the murmur was associated with slight hypertrophy in a group of 37,708 individuals, the mortality ratio was 234 per cent; when the murmur was associated with moderate hypertrophy, the ratio rose to 476 per cent in a group of 9,122; that is, when moderate hypertrophy accompanied the murmur, death occurred almost 5 times as often as among average individuals (Chart 4). The extent to which hypertrophy reduces the life expectancy among large groups of insured individuals, bears out the clinical and pathologic observation that the prognosis in heart disease depends upon the condition of the myocardium.

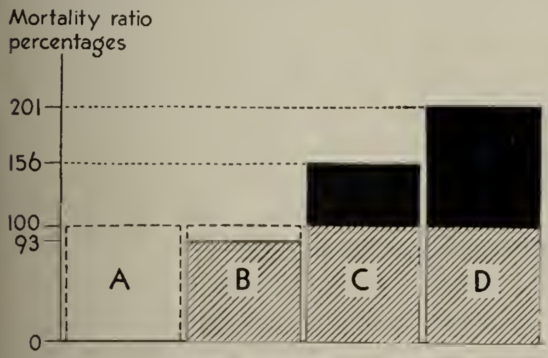

Chart 3. Mortality ratio among insured individuals with a constant systolic apical murmur, not transmitted. (A) Expected death rate among 100,000 average individuals, according to the American Experience Table of Mortality; (B) actual death rate among insured individuals in a group of 3,954 individuals insured at the standard rate of premium; (C) in a group of 30,943 individuals insured at a substandard rate of premium; and (D) in a group of 4,372 individuals with slight hypertrophy.

Recently several clinicians have protested against dismissing heart murmurs as insignificant. Although the discussion of the most tenable basis for the interpretation of murmurs in adults is outside the scope of this discussion, the opposing views have been noted to explain the importance which is often attached to the presence of a murmur in an otherwise normal child. Confusion results, I believe, from an attempt to interpret murmurs in children on the basis of the findings in the older age groups.

Fortunately, the results of the study of several series of children having murmurs are available for our consideration. One of the most interesting is that of Brewer[4] of England, who kept a register of 22,276 school children between the ages of 3 and 14 years, in which he recorded all the cardiac findings over the 5-year period immediately preceding the World War. Since functional murmurs were believed at that time to be an evidence of heart disease, they received as careful attention as the so-called organic ones.

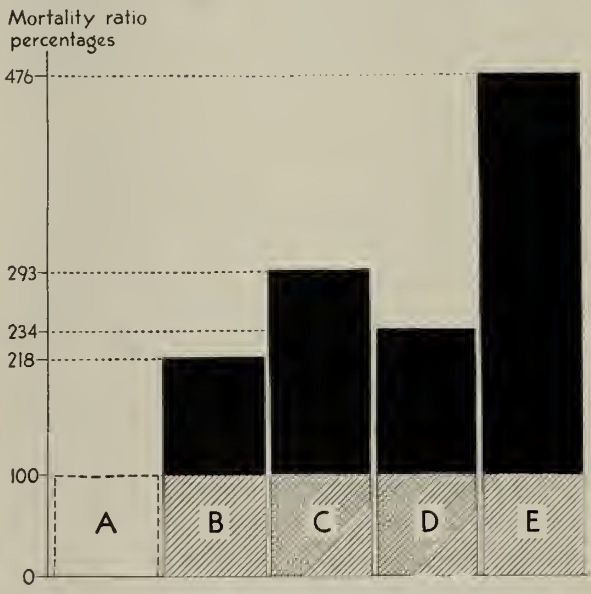

Chart 4. Mortality ratio among insured individuals with a constant systolic apical murmur, transmitted. (A) Expected death rate among 100,000 average individuals, according to the American Experience Table of Mortality; (B) actual death rate among insured individuals in a group of 107,285 individuals engaged in light work; (C) in a group of 11,349 individuals engaged in heavy work; (D) in a group of 37,708 individuals with slight hypertrophy; and (E) in a group of 9,122 individuals with moderate hypertrophy.

Of the 453 cases of functional murmurs, 282, or 62 per cent, disappeared during the period of observation. In only 7 of the 453 cases, or 1.5 per cent, the diagnosis of functional murmur had to be changed to a diagnosis of organic heart disease. Campbell and Warner[5] reported in 1930 that a soft systolic apical murmur, which appeared in 54 cases of rheumatic fever among the outpatients of Guy's Hospital, London, disappeared in 44, or 81 per cent, of the cases during a 3-year period of observation; but that a harsh systolic apical murmur disappeared in only 4 out of 11 cases (36 per cent). More recently Warner,[6] who had observed a series of 180 rheumatic children with a systolic murmur at the apex, stated that a soft systolic apical murmur gradually disappears in about 80 per cent of the cases in which it has been present; whereas the harsh murmur transmitted into the axilla disappears in only about 40 per cent of the cases. We find, therefore, in analyzing these series, that a so-called functional murmur or a soft systolic apical murmur disappears within a few months or years in from 60 to 80 per cent of the cases in which there is no history of rheumatic heart disease.

The findings in these series confirm my own observations made over a period of several years at the Cardiac Clinic of the Children's Hospital. Upon examination of the child in the erect, prone, and left recumbent positions, the systolic murmur is in many cases found to be cardiorespiratory in origin. This murmur, which results from the ventricles creating an area of vacuum during systole and thereby accelerating the movement of air into the lungs, is considered to be a normal finding in children during exercise or excitement. Children are also commonly found to have soft blowing inconstant murmurs, not transmitted, and usually audible only in the recumbent position or after exercise. A constant systolic murmur at the apex, the so-called mitral murmur, is elicited in a small number of well-nourished, apparently healthy children who present no other physical or laboratory sign of disease, no evidence of a congenital defect, and no history of rheumatic infection. In evaluating the significance of this murmur in its application to the curtailment of the child's activity, it is well to remember the dictum of Coombs.[7] The earliest symptoms of rheumatic carditis, he said, "are not cardiac but constitutional—loss of appetite, vague seediness, increasing pallor, and above all, loss of weight." The cardiorespiratory and the inconstant blowing systolic murmurs, as well as the constant systolic apical murmur occurring in a well-nourished, non-rheumatic child, are not to be interpreted as evidence of heart disease. A child's activities should never be restricted on the basis of these murmurs alone nor should a diagnosis of heart disease be made to the child's parents.

When a constant systolic apical murmur is associated with cardiac enlargement or when the patient has had a single attack of rheumatic heart disease, the murmur will disappear in a small percentage of cases. Fineberg and Steuer[8] of Cleveland over a period of years observed 100 children, 20 years of age or younger, who had systolic apical murmurs. Thirty-eight of the group had a history of rheumatic fever or chorea and 77 had either cardiac enlargement or a change in the contour of the heart, as shown by orthodiagrams. The murmur disappeared in only 8, or 8 per cent, of the patients. Three of these children were under 5 years of age. The authors note that this confirms the view commonly held that the systolic murmur in very young children is of no serious consequence. Bland, Jones, and White[9] of Boston, in a study of 1,000 cases of rheumatic heart disease under observation for from 5 to 15 years, reported the total disappearance of all clinical evidence of heart disease, including systolic apical murmurs, in 83 instances (8.3 per cent).

My observations at our Children's Hospital Cardiac Clinic lead me to believe that in Washington we have a considerably higher percentage of patients in whom all signs, including murmurs, disappear. The explanation may lie in the fact that Washington is situated in a more southern latitude than either Boston or Cleveland. I hope at a later time to present an analysis of our series of cases for comparison with the series obtained in other sections. Both in the Clinic and in private practice I have observed a considerable number of cases in which a mild attack of myocarditis subsided without leaving permanent damage. In a first attack of rheumatic carditis, a systolic murmur at the apex may be produced by the dilatation of the heart. As the carditis becomes more pronounced and the heart continues to dilate, the murmurs increase in their intensity. In some of these cases I have noted the gradual return of the heart to its normal size and the concurrent disappearance of the systolic murmur.

The variety and intensity of the murmurs which cardiac dilatation and hypertrophy may produce was brought very strikingly to my attention in 1931 in the case of a colored male, 11 years of age, who was admitted to the Children's Hospital because of myocardial incompetency following repeated attacks of rheumatic fever during the previous year and a half. A systolic and a diastolic murmur were elicited at the apex, and a systolic murmur at the right base of the heart. A teleroentgenogram showed cardiac enlargement. The patient was hospitalized for prolonged periods on two subsequent occasions. The cardiac enlargement, the systolic and diastolic mitral murmurs, and the systolic aortic murmur which had been noted at the first examination remained. A diastolic aortic murmur and a collapsing pulse developed during the second year he was under observation. It was thought that both mitral stenosis and regurgitation, and aortic stenosis and regurgitation were present. Later, auricular fibrillation ensued. An exacerbation of pericarditis and the onset of pulmonary edema caused the death of the patient 2½ years after he came under our observation and 4 years after his first attack of rheumatic fever. At autopsy it was found that the heart was enlarged, "grade 4," and that it occupied the entire anterior left hemithorax, except at the apex. The myocardium was soft and appeared to have been inflamed. Extraordinary as it may seem, no gross changes were present in the valve leaflets. In the report[10, 11] of the case in 1934, it was pointed out that cardiac dilatation may produce murmurs that are clinically indistinguishable from those produced by mitral stenosis and aortic regurgitation, and that the myocardium may be extensively involved without an accompanying valvular deformity. In 1923 Wood and White[12] had called attention to the fact that diastolic murmurs leading to a clinical diagnosis of mitral stenosis might occur in greatly dilated hearts with normal valves. In 1935 Bland, White, and Jones[13] reported the clinical and pathologic findings in a series of 100 young individuals with rheumatic heart disease who were examined post mortem. From a study of these findings the authors concluded: "It is evident that with severe and recent rheumatic infection in childhood when well-marked cardiac enlargement (dilatation) is known to have occurred within a few months, the presence of a rumbling sound or short blowing murmur in mid-diastole or late diastole in the vicinity of the cardiac apex in addition to the usual systolic murmur cannot be considered pathognomonic either of mitral stenosis or of any other extensive valvular deformity, but is dependent fundamentally upon severe myocardial disease." These authors also reported that in a series of 950 cases of rheumatic heart disease, 32 patients with cardiac enlargement and mitral diastolic murmurs presented clinically normal hearts without enlargement or murmurs after an average follow-up period of over 8 years.

At the Cardiac Clinic of the Children's Hospital a group of children are found to have a well-established persistent systolic murmur at the apex following a single attack of rheumatic heart disease. Our experience shows that a number of these children will not have a recrudescence. Having recovered from their first attack, they may continue to have a systolic murmur at the apex but may show no symptoms or signs of active rheumatic heart disease, just as in cases of tuberculosis there may be a healing of the lesions but certain abnormal inactive signs may continue to be elicited by the use of the stethoscope. Because these children have a persistent systolic murmur at the apex, it does not follow that they have a damaged myocardium. The criteria by which a child's activity should be gauged are not the intensity and persistence of a heart murmur but the degree of cardiac enlargement and the patient's response to effort. If after exercise the heart rate returns to normal within 3 minutes, no restrictions should be placed upon the child's activities, provided always that no signs or symptoms of focal infection are found.

When a child with a history of recurrent attacks of rheumatic heart disease has cyanosis of the mucous membranes and enlargement of the left auricle with widening of the pulmonary conus, as shown by percussion or teleroentgenogram, the systolic and the diastolic murmur at the cardiac apex probably denote a deformity of the mitral valve. If the murmurs persist after the acute dilatation has subsided and there is no enlargement of the left ventricle or auricle, stenosis and regurgitation are probably not present, although they may later develop following reactivations of the rheumatic infection.

It should be said in passing that unless one is proficient in the art of percussion he should hesitate to diagnose mitral stenosis and regurgitation on auscultation, but should, instead, have a teleroentgenogram taken. The expense of the teleroentgenogram is slight in comparison with the loss to the patient which may accrue from an incorrect diagnosis. If the patient cannot himself bear the expense of the film, he may enter a clinic where the necessary laboratory work is done routinely by the hospital.

It has been my experience that not infrequently congenital heart disease is erroneously diagnosed as rheumatic heart disease and patients are unnecessarily and inadvisedly treated, because the presence of a murmur is considered evidence of rheumatic heart disease. This confusion is especially likely to occur if a child with a patent ductus arteriosus is examined at a time when he has a febrile illness. He may then be confined to bed for a prolonged period on the assumption that active carditis is present. When a systolic and a diastolic murmur at the cardiac apex are due to a permanently established patency of the ductus arteriosus, there may or may not be a history of rheumatic infection; but there is no permanent cyanosis of the mucous membranes of the lips, such as is found in a stenosis of the mitral valve. After the child has reached the age of 10 or 12 years and the ductus arteriosus has not closed, it may be considered a permanent congenital defect. When a permanently established patency of the ductus arteriosus is present, one may also find other congenital defects.

A systolic murmur at the cardiac apex associated with a rapid heart rate is sometimes taken as evidence of active or convalescing rheumatic heart disease and the patient is kept at rest or his activities are restricted. I recall a case in point of a child who appeared at the Cardiac Clinic with a diagnosis of active rheumatic heart disease in the convalescing stage. The child was not being permitted to attend school because she would have to climb a flight of stairs in the school building. The mother had given up her job and had gone on relief in order to stay at home and care for the child. Upon physical examination no signs or symptoms of active rheumatic heart disease were found, although a systolic murmur, paroxysmal tachycardia, and sinus arrhythmia were present. The child's response to effort was normal. Upon questioning the patient it was learned that she and her mother were living on the third floor of a house in which there was no elevator and that the child had been climbing the two flights of stairs 2 or 3 times daily without symptoms being produced. When a rapid heart rate is present at the time of physical examination and there is no elevation of temperature, the paroxysmal tachycardia may be due to excitement, nervousness, or apprehension. In such cases, if the sleeping pulse rate shows a drop of from 10 to 20 beats below the alert rate, it may be considered evidence that the tachycardia was of nervous origin.

A persistent tachycardia, especially when the increase in pulse rate parallels an elevation in temperature, is suggestive of the presence of an infectious process and should be investigated. A very rapid heart rate may be maintained for days or weeks in a young child without heart disease being present, either as a contributing or an exciting cause or as a result of the tachycardia. This observation is supported by the findings in a series of 16 cases which were collected from the literature with an additional case reported.[14] These 17 patients, of whom 14 were under 21 years of age, showed heart rates of approximately 300 beats per minute, which in some cases persisted for days. In only 1 case was established heart disease present. In the case which was reported, attacks of tachycardia with a rate of over 300 beats per minute occurred during a period of 10 days. At autopsy the heart was found to be normal upon gross and microscopic examination.

The arrhythmias, such as paroxysmal auricular tachycardia, sinus arrhythmia, dropped beats, premature auricular or ventricular contractions, and sinus block, do not constitute a basis for the diagnosis of active rheumatic heart disease unless they are accompanied by other signs or symptoms of the disease. A patient who has been under my observation for several years had a persistent tachycardia with block, which had its onset when she was 6 years of age. She was in a hospital and in bed at home for 2 years because of the persistent arrhythmia and the rapid heart rate. When she came under my observation she was given quinidine sulfate, and the normal heart rate was resumed temporarily. Following tonsillectomy a few months later a normal rate was reëstablished. At present the patient is 14 years old, attends high school regularly, climbs two flights of stairs at school, participates in sports and gymnasium exercises, and has no signs or symptoms of rheumatic heart disease.

SUMMARY

1. At the Cardiac Clinic of the Children's Hospital, where a large number of children have been followed for a period of years, it has been found that the cardiorespiratory and the constant or occasional systolic apical murmur occurring in a well-nourished, non-rheumatic child are not evidences of rheumatic heart disease. On the basis of these murmurs alone a child's activities should not be restricted.

2. It has been observed that among those patients who have had an attack of rheumatic heart disease a small number have become clinically free of all symptoms and signs of the disease, including murmurs.

3. The myocardium in some cases may be extensively involved without an accompanying valvular lesion. Cardiac dilatation alone may produce murmurs that are clinically indistinguishable from those produced by mitral stenosis and regurgitation and by aortic stenosis and regurgitation. In certain cases there will be a concurrent disappearance of both cardiac dilatation and valvular murmurs.

4. A child who has a persistent systolic apical murmur following a single attack of rheumatic heart disease should not have his activity curtailed provided that his response to effort is normal and there is no evidence of active infection.

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Intermittent Claudication as an Early Symptom of Cardiovascular Disease. During the month of January, 1937, one of the authors saw 3 patients with coronary occlusion, each of whom had previously suffered with intermittent claudication. Therefore it occurred to us that possibly a history of intermittent claudication or even cramps in the calves of the legs at night might be a useful warning in potential cases of coronary occlusion. . . .

Conclusions.—1. Physicians in various parts of the world are considering the possible relationship of intermittent claudication and cramps in the calves of the legs at night with angina pectoris, coronary occlusion, and essential hypertension.

2. Studies of patients in the heart clinic of a general hospital and those referred for private cardiovascular consultation during the past 10 months suggest:

(a) There is some relationship between intermittent claudication and coronary occlusion, since there was an incidence in 57 such cases of 7 (12.2 per cent) with intermittent claudication and only one in a control series of 106 patients without heart disease.

(b) There seems to be no definite relationship between hypertension or angina pectoris and patients with intermittent claudication.

(c) Patients with angina pectoris or coronary occlusion appear to have no more cramps in the calves of the legs at night or in the muscles of the feet or toes than patients with no heart disease.

(d) Patients with hypertension are more apt to have such vascular phenomena in the legs while at rest than are patients with no heart disease.

Abstract of article by William D. Stroud, M.D., and Norman P. Shumway, M.D., Philadelphia, *The Pennsylvania Medical Journal, July, 1938, p. 894.*

ARTIFICIAL INSEMINATION*

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Washington

The past decade has witnessed an extraordinary development of scientific interest in the understanding of problems involving human fertility. The chief contributions have been in endocrinology and in the physiology of ovulation, menstruation and conception. Today a new and voluminous medical literature in these fields gives us a picture of such clarity as to make an almost incredible contrast with the muddled, unscientific concepts of only a very few years ago.

Among the many practical results of all this progress has been a sharp stimulation of interest in the subject of human artificial insemination. The one thing in recent knowledge that has been of most value in this connection has been the relatively accurate fixing of the time of ovulation. This information, while of poor practical value in the prevention of conception, is of great value in timing an insemination when conception is desired. The occasional failure of ovulation to occur as predicted may prove a contraceptive tragedy, but in respect to an artificial insemination it means merely waiting for another month and repeating the procedure.

It is the purpose of this paper briefly to outline salient facts concerning the present status of artificial insemination. Both indications and technic will be considered.

The most obvious usefulness of artificial insemination is in a childless marriage in which the husband is aspermatic and agrees with the wife upon the use of sperms from another source. Here there are legal and emotional considerations of importance. In a recent paper on artificial insemination appearing in the Journal of the American Medical Association there was described a rather elaborate technic employed to insure, by a series of affidavits, the legitimacy of the child's birth and legal protection for the physician. Personally I am opposed to any system of affidavits, because too many embarrassing confidences are involved and nothing substantial is actually gained. I would point out that the Common Law absolutely estops a man from denying parentage of a child whom he has accepted as his own at the time of its birth. He will not later be allowed to plead his sterility. This rule of law is founded upon a public policy of protecting as far as possible the presumption of legitimate birth. It is the law in the District of Columbia.

The physician should protect himself by having the husband present at the time insemination is accomplished and by obtaining from the husband a note of assent which may be destroyed a few days after the husband's silent acceptance of the newborn infant. It is my policy to insist, for emotional reasons, that the sperms be from an unknown donor who is assuredly free from disease and of good heredity. It is potentially dangerous for the donor to be known to the parents of the child. It is best that the impregnation be looked upon as a strictly impersonal happening.

When a woman has been inseminated from a source other than the husband it is wise that she be delivered by a physician who knows nothing of this circumstance. I have found that this suggestion is usually gratefully accepted by these patients and it eliminates any worries for the obstetrician.

Sterility in the husband is by no means the only indication for artificial insemination. I have found the procedure of marked value in certain cases in which pregnancy does not occur from sexual intercourse but may be brought about by an instrumental insemination in which the semen of the husband is used. This procedure is especially indicated in the presence of any type of cervical obstruction, such as in marked anteflexion, and in certain cases of cervical infection in which spermatozoa cannot readily pass the cellular débris in the cervical canal. In my judgment it is well worth a few trials in any case of persistent infertility in which a careful modern study has failed to reveal any cause for sterility in either husband or wife. I have several times employed it with success in such cases.

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* Read at the Annual Scientific Assembly of the Society, May 4, 1938.

The technic of artificial or instrumental insemination is quite simple and without danger of complications if done with reasonable skill. Two preliminary steps are most important. First, it is necessary to calculate, upon a basis of past menstrual history, the probable date of the next expected ovulation and to inseminate at that time. Second, it is most desirable to gain in advance an exact knowledge of the length and direction of the cervical canal. It is my practice to pass into the cervix the blunt end of a small flexible silver probe which is experimentally bent until so curved that it can be passed to the internal os without the slightest obstruction. Later the tip of the insemination cannula is bent to a similar curvature so that it can be passed through the internal os without producing bleeding. It is possible by this method to avoid bleeding during the insemination, and I believe this to have some advantage, although I have seen impregnation occur when there was a little bleeding from slight traumatization of the internal os. It requires a painstaking technic, and often some good luck as well, to pass the internal os with no bleeding whatever.

The seminal fluid to be used should be obtained by manual masturbation, within a half hour of the insemination. It may be kept much longer, but there had best be no great delay. The penis and hands of the donor should be thoroughly washed and dried in an antiseptic manner and the specimen retained by direct ejaculation into a sterile container, such as a 30 cc. beaker. It is important that this container be washed with sterile distilled water before being used, since chemical residue from the sterilizer may have a devitalizing effect upon sperms.

The freshly ejaculated seminal fluid is a stringy mixture of seminal vesicular and prostatic secretions and cannot readily be aspirated through a cannula. It should stand for at least 10 minutes before being used in order to allow for full liquefaction and for complete activation of sperms. Before being used the specimen should be given a final microscopic check against increase in leukocytes and to verify good motility of sperms.

For introducing the seminal fluid into the fundus I use a long, thin, flexible silver cannula of a type designed for making instillations into the male posterior urethra. This instrument is 8 inches long and about 16 gauge in diameter. The tip of it is bent in advance to conform to the previously determined angulation of the cervical canal, and it is attached to a 1 cc. tuberculin syringe. Such a syringe is desirable because of its fine graduations, by means of which it is possible to measure tenths of a cubic centimeter very easily. I believe it good practice to draw a little seminal fluid into the cannula and syringe and wash them out with it, discarding this first portion and then drawing in 0.4 or 0.5 cc. for the insemination. One should be careful to expel all air from the syringe and cannula before injecting the semen into the fundus.

When all is ready the cannula is passed with the aid of an ordinary bivalve speculum into the cervical canal and up a little past the internal os. Then 0.1 or 0.2 cc. of the seminal fluid is gently expelled from the syringe at a very slow rate. No more than 0.2 cc. should be used, since larger amounts are likely to induce uterine cramps. The smaller amount will cause a patient no discomfort whatever in most cases. This completes the procedure. The patient is allowed to go about her usual activities without the least restriction.

I know of no contraindication to artificial insemination except acute infection in the cervix. Great tortuosity of the cervical canal is an obstacle to be treated with respect, but it is not likely to be a real contraindication.

In conclusion, I offer the prediction that within a few years artificial insemination will have become widely established as a safe and valuable medical procedure of considerable practical importance.

THE TREATMENT OF RHEUMATOID ARTHRITIS*

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It is well to review from time to time the means at our disposal for the treatment of patients with rheumatoid arthritis.† As the result of fundamental studies of the anatomic and physiologic changes that occur in rheumatoid arthritis, we are revising our concepts of the disease. The present state of our knowledge of the etiology and pathogenesis is not entirely satisfactory. Better understanding of the disease will lead to more satisfactory methods of control and treatment. However, the importance of individualized treatment with particular attention to the patient's general health can well be reëmphasized.

Frequently the patient encounters the attitude of hopelessness and lack of interest. He is advised to take a few aspirin tablets, to have his teeth extracted, even though they may be perfectly healthy, and to have his tonsils removed. The medical adviser often lacks the necessary knowledge, tact, perseverance and sustained interest. This is particularly unfortunate, since early in the disease so much needs to be done. The attitude of this type of practitioner is to be deplored.

At the other extreme we find so-called arthritis specialists who depend more or less upon a given "specific" or panacea. These are often given by injection intravenously, intramuscularly, subcutaneously, intradermally, even intraspinally. These men have a tremendous faith in "their method." The infectiousness of this faith certainly plays a rôle in their results in patients with rheumatoid arthritis. It is a valuable psychiatric prop. These "specifics" are usually employed in conjunction with a régime conducive to improvement or in anticipation of a normal remission of the disease. Such a preparation, drug or vaccine, used exclusively and without regard to the patient's general health, is to be condemned.

Before any treatment worthy of the name can be undertaken, a thorough and painstaking diagnostic study must be carried out. Attention is to be directed first as to whether the patient really has rheumatoid arthritis. Patients have been treated for arthritis when the rather obvious diagnosis has been overlooked. I have encountered several patients who have been treated with streptococcal vaccines, colloidal sulfur, etc., whose diagnoses were rheumatic fever, gout, hyperparathyroidism, myxedema, combined system disease of pernicious anemia, and peripheral alcoholic neuritis.

After the establishment of the diagnosis of rheumatoid arthritis, all possible alterations in body function are to be recognized and evaluated. Without too great detail one may mention (and not necessarily in the order of their importance): (1) Foci of infection, (2) abnormalities of colon function, (3) malnutrition, (4) anemia, (5) factors of metabolism, (6) deformities and limitation of function of the joints and periarticular structures, (7) mechanical defects in the function of joints, and (8) the mental state of the patient. Each patient must be approached as an individual whose problems are peculiar to himself. Each is a separate entity as to symptoms and signs; consequently the treatment must be adapted to the individual patient. Never may one treat the individual as one of a series of 50 or 100 patients with rheumatoid arthritis. Mimeographed directions even as to the diet should be discarded. The adjustments and arrangements should be suited in detail for each patient.

It is evident that I cannot proceed to outline the treatment for patients with rheumatoid arthritis. I should like to refer to a few fundamental procedures. I like to look upon the medical problem in the treatment of rheumatoid arthritis as not dissimilar to that in tuberculosis. The care of the tuberculous patient depends a great deal on attempting to attain and maintain the best possible general health. Such measures as the injection of tuberculin, creosote and gold salts in the treatment of tuberculosis have been discarded. In the case of patients with rheumatoid arthritis, a chronic and prolonged illness, the importance of the general health is to be stressed.

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* Read at the Annual Scientific Assembly of the Society, May 4, 1938.

† Rheumatoid arthritis is used synonomously with atrophic, proliferative and chronic nonspecific infectious arthritis.

Rest is of utmost importance, probably the most important single factor in the treatment. Rest in bed, however, is not sufficient. Too often one tells the patient how many hours to spend in bed without regard to worry, anxiety, restlessness and tension. By rest is implied relaxation, repose and avoidance of fatigue.

There is no arthritic diet *per se*. However, dietary supervision is quite important. In a study of the dietary habits of patients with rheumatoid arthritis no deficiency or excess of any one factor is consistently noted. Yet there frequently are departures from what is considered normal. The patient who suffers from rheumatoid arthritis is not uncommonly malnourished. The presence of this chronic illness may give rise to capriciousness of appetite. The duration and nature of the illness may require fortification of the diet with the various minerals and vitamins. Quite correctly, the patient expects to be told what to eat. This does not imply that one need ascribe to the fads of diet which have been discarded by many who are familiar with the dietary needs of the arthritic. Briefly, the diet for the individual patient takes into account the needs for an optimum nutrition, relief of constipation, avoidance of foods to which the patient may have an idiosyncrasy, and abundance of the various vitamins and minerals.

There is a middle ground to take as regards the removal of foci of infection. Quite true, associated foci of infection should be removed early but without failing to carry on other measures. Conservative judgment as to the advisability of depriving the patient of various organs and appendages must be exercised. Many patients with arthritis have been greatly harmed by the indiscriminate extraction of sound teeth, thus depriving them of an important digestive organ. The removal of a probably infected gall-bladder may bring disappointment or worse. One bears in mind that eradication of chronic focal infections may be advisable for the general health of the patient, and yet these measures will not necessarily give rise to a miraculous cure of the arthritis. The severity of the operative procedure, the degree of infection, and the probable relationship to the disease are to be evaluated.

As to the use of drugs, attention is directed briefly to those needed to alleviate pain and to treat the complications or attendant disorders. The alleviation of pain may require some form of salicylates and occasionally small doses of codeine. The relief of pain aids materially in the course of the disease, as for example, by permitting rest and sleep. Specific treatment of an existing anemia is of the utmost importance. Small doses of thyroid extract may be helpful to the patient with a lowered basal metabolic rate. Ovarian preparations may be indicated if there are associated menopausal symptoms.

It has been said that coöperation from practitioners of various specialties is essential for the care of the arthritic. Particularly is this true of the internist, orthopedist and physiotherapist. Too often the internist and the orthopedist discount the value of the other's services. The one is inclined to apply his knowledge of the other's field. Too often the orthopedic training of the internist is rather elementary and the orthopedist's approach to the problems of internal medicine is superficial. To the internist the orthopedic problems of correction of existing deformities are difficult of solution. Even more important are the knowledge and equipment for the prevention of joint deformities; inadequate care for even a few weeks may permit the development of distressing deformities. The prescribing of physiotherapeutic measures means a great deal more than sending the patient to a physiotherapy technician. Detailed directions are to be given as to the measures to be employed. The patient with rheumatoid arthritis must have his directions for rest tempered with exercise. This may be general exercise, such as walking. Frequently indicated are postural exercises, muscle-setting exercises, and the re-training of groups of muscles which have become atrophied from disuse. In some instances passive exercises, such as massage and passive movements of the joints, are advisable. The various measures for increasing heat locally, such as baking, diathermy and the like, are helpful in the relief of pain and probably of the inflammatory process.

The physician who cares for the arthritic patient needs to practice a great deal of simple but sound psychotherapy. He must be understanding and imaginative in dealing with the patient's problems of life, no matter how trivial. The patient's attitude toward his illness requires frequent, sympathetic discussion. Each patient presents a personality of his own. He must be instructed and led in the course of living best suited for him. The patient has to be educated to meet the existing problems as well as the future problems of a patient with a chronic disease, with all that that implies. Minot has said "to teach the art of courageous living is often the chief prescription of the patient with chronic arthritis."

It is impossible to review the results of the various supplementary therapeutic suggestions. Dramatic results have been claimed for streptococcal vaccines, nonspecific fever therapy, colloidal sulfur, chaulmoogra oil, X-ray therapy, massive vitamin dosage, be it B or D, gold salts, spinal fluid of the horse, parathyroidectomy, bee venom, histamine, acetyl-beta-methylcholine, various types of diathermy, etc. We welcome the attempts to improve our armamentarium in the treatment of this chronic disease. But even a superficial perusal of the claims of the enthusiasts of these preparations leaves us disappointed. So frequently one reads that 66⅔ per cent of the series of patients who received the therapy under consideration were cured or markedly improved. Little is revealed about the accuracy of the diagnosis or the duration and severity of the illness. Neither are control groups of cases used for comparison, nor are data given which would permit the reader to evaluate the results as compared with the natural course of the disease. If one reads the reports of the results from the use of several of these preparations, he concludes that a fair percentage of patients either recover or improve very markedly when no more is done than to follow conservative fundamental lines of therapy. It is rarely necessary to inject several cubic centimeters of an expensive preparation into the buttocks to satisfy the patient's desire to have something done. Furthermore, rare untoward reactions are inevitable even in the hands of the most cautious.

Rather than object to the use of such substances in the treatment of patients with arthritis, it must be insisted that these be employed as supplementary methods of therapy. There is a tremendous field open for investigation in the treatment of chronic arthritis. However, these supplementary measures must be employed and the results analyzed with considerable critical judgment. Scientific analysis does not permit unbounded enthusiasm. May we not expect to ask when and how to use these measures? We are less interested in the results of such treatment of 100 unselected patients than in the results in the treatment of patients selected carefully for diagnosis and according to the stage of the disease. We are, furthermore, justified in inquiring of the course of the disease years hence in patients so treated.

Investigations as to the various specific therapeutic methods should be directed not just toward how many patients will be improved. It is important for us to accumulate information concerning which patients are to run a short course with complete and possibly permanent remission, which ones will experience a recurrence of remissions and exacerbations, and which others will continue on a downhill course to eventually complete disability. Then let us inquire of the investigators what "specific" procedure will be of real benefit in a given patient. Is it probable that "X" injected intramuscularly will be a real aid in inducing a remission? Is it possible that certain measures will avoid the helpless tragic development of disability in the slow progression in a few patients? How much more valuable would a contribution be which informs us of the efficacy of a given procedure in a definite clinical type and stage of the disease.

In summary, one can say that patients with rheumatoid arthritis require a physician liberally endowed with thoroughness, patience, optimism, and imagination. The therapeutic régime is based on the attainment and maintenance of the best possible health, physical and mental. Each patient requires an approach peculiar to himself.

THE SIGNS AND SYMPTOMS OF INTRACRANIAL TRAUMA*

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Deaths due to brain injury continue to be an increasing factor in the mortality rate of the District of Columbia. Local statistics, derived from a study of the original death certificates since 1900, show that the percentage of deaths due to head injury has increased, not only in total numbers, but also in relation to the total death rate and to all deaths from external and violent causes. Total deaths from fracture of the skull were 23 in 1900. In 1910, there were 55. In 1920, there were 58. In the last year, 1937, there were 194.

The percentage in relation to the total deaths increased from 0.38 per cent to 0.84 per cent from 1900 to 1910, and from 0.89 per cent to 2.21 per cent from 1920 to 1938. The relationship to deaths from external and violent causes follows these curves with 11 per cent in 1900, 15 per cent in 1910, 16 per cent in 1920, and 24.65 per cent in 1937.

Three principal causes of these injuries in 1937 are noted: First, accidents from traffic, which caused 113 of these 194 deaths; second, gunshot wounds, which produced 36 of these deaths; and third, falls from heights, which resulted in 20 deaths. Among the head injuries by gunshot, 30 of the 36 were suicides, while only 4 of the 20 fatalities resulting from falls were purposely produced for self-destruction.

Among these fatalities it is of interest to note that in 1937, 36, or 25.5 per cent of the individuals, lived more than 1 day, the longest time elapsing before death being 4 months; further, that 4, less than 2 per cent, died of meningitis, while 1, less than 0.5 per cent, developed a brain abscess and died on the twenty-eighth day after injury. The 4 deaths from meningitis are reported as occurring in from 1 to 21 days.

By way of parenthesis, the fact should be stressed that prevention through both traffic control and adequate mental hygiene would materially reduce our mortality rate; and further, it must be remembered that from a diagnostic and therapeutic standpoint the group of patients dying within a few minutes or hours after injury cannot, as a rule, be adequately studied or treated. Any general study of head injuries cannot be entirely divorced from associated injuries, and it is frequently difficult or impossible to evaluate the latter. Finally, study of local death certificates, all coroners' cases, are not sufficiently detailed to allow exact analysis.

In a relatively recent study of a group of head injuries I found a mortality rate of 17.2 per cent. Of these patients the most seriously injured (27.6 per cent), were operated upon with a mortality rate of 44 per cent, while the unoperated group (72.4 per cent) had a mortality rate of only 7.1 per cent. These figures are about the average in other reported series and indicate an approximate 1,140 individuals suffering such injuries in Washington last year.

Fracture of the skull may produce no symptoms or signs. However, intracranial injury, with symptoms and signs, may occur without demonstrable bone injury and from apparently trivial trauma.

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Subjective symptoms of intracranial injury are few. Headache is usual, and may be associated with vertigo and dyspnea. It may vary in degree. Its distribution is usually generalized. Nausea is also usual, and is frequently associated with active vomiting.

The signs of intracranial injury are classified as early or immediate, and late or delayed. These phenomena are not distinctly delineated. They merge one into the other.

Shock of varying degree is usually immediate. It is of little value in estimating the severity or extent of the injury.

The mental state is likewise of little value in estimating the severity or extent of injury, but the degree and duration of unconsciousness is usually closely related to the degree of severity of the injury. There may be lucidity following a short period of unconsciousness, or lucidity with gradual loss of consciousness. This picture occurs frequently in association with confined hemorrhage.

Percussion of the skull may give a "cracked-pot" note, which is typical of fracture. By this means localization of a fracture may be possible.

Soft tissue injury may also indicate the area of a fracture, though spreading lines of fracture, and injury by contrecoup are frequent.

Exudate of blood, mixed with cerebrospinal fluid, from the mouth, ears or nose is typical of basilar fracture. It indicates a compound wound, as does a scalp wound over the skull with cerebrospinal fluid escaping.

Hematomata are of no value in the diagnosis of skull injury, except in those fractures about the mastoid when "Battle's" sign is typical.

Ophthalmoscopic examination reveals very little in the early stages, but papilledema may be noted later. It persists as long as cerebral edema or compression lasts. Its greatest usefulness is in the observation of the chronic post-traumatic syndrome.

The pupillary light reflex is always present if patients are seen early enough after reaction from shock. The pupils tend to be contracted at first, and loss of the light reaction with dilatation of the pupils ensues gradually. Unilateral dilatation may indicate the side of the cerebrum in which pressure is increasing, but in two patients I have seen this phenomenon at variance. The pupils become dilated and fixed in the terminal state.

Ocular nystagmus is a serious prognostic finding.

Cranial nerves are frequently affected by solution of their continuity or by pressure at their exits from the skull. Those most frequently damaged are the sixth, seventh, and eighth.

Other neurologic findings are also of diagnostic import in intracranial injury.

The reflexes are first increased, and later, when compression from any cause becomes greater, they are decreased or abolished. With the primary hypertonus there is hyperirritability, which may also be abolished later.

Progress of these findings must be carefully noted. They are particularly important for the purpose of localizing the site of major injury.

Likewise, carefully repeated observation of the temperature, pulse, respiration, and blood pressure must be practiced.

Shock is the dominant picture following injury. At this time the temperature may be subnormal, the pulse thready and rapid, the respirations shallow and fast, and the blood pressure lowered. When shock is overcome, reversal of these findings occurs, and extreme hyperpyrexia may ensue.

Slowing of the pulse rate, increasing blood pressure levels, and labored breathing indicate advancing cerebral compression, during which time treatment is practicable.

The final stage of compression, when any treatment is usually unavailing, is denoted by a falling blood pressure, a fast irregular and thready pulse, irregularity of respiration, fixed and dilated pupils, and complete stupor with loss of reflexes.

In my opinion, lumbar puncture is a valuable diagnostic, as well as therapeutic adjunct. It should never be done without manometric control, because pressure findings are as valuable in diagnosis as are chemistry and cytology of the fluid. The manometer is also necessary because lumbar puncture is not a procedure free from danger.

Roentgenographic examination of the head should never be the primary mode of study. All of the above enumerated observations are more important in determining the area of maximum brain injury and its treatment. The non-apparency of fracture does not preclude its presence. Unhurried X-ray examination, with several views, at a later time allows better study.

All diagnostic study has adequate treatment as the objective. These studies are enhanced by a careful history of the etiology, the presence of unconsciousness and its duration, the presence or absence of paresis or paralysis, as well as preëxisting disease, and the usual blood pressure.

Acute Lymphocytic Meningitis and Other Virus Diseases of the Central Nervous System. We are passing through an age of bacterial disease into an age of virus disease. This is shown not only by the vast literature on virus diseases which is to be found in current periodicals but also by the increase in the numbers and variety of virus maladies reported. . . .

Those viruses particularly affecting the central nervous system are conveniently classified on the basis of the part primarily attacked. Certain viruses appear to have an affinity for nerve cells and fall into a group, "obligatory neurotropic" in character. Four well-known diseases are caused by viruses of this type: poliomyelitis, encephalitis, rabies and herpes zoster. In all, the virus causes destruction of parenchymatous nerve tissue without affecting other parts of the body. On the other hand, viruses affecting the body apart from the nervous system may also, under certain circumstances as yet not clearly understood, become neurotropic and cause central nervous system disease. . . .

Acute Lymphocytic Meningitis. The disease, first clearly described as occurring in children by Wallgren of Gothenburg in 1925 and long called *acute aseptic meningitis*, was considered a possible clinical entity by him and in 1929 by Viets and Watts, who reported the first cases in this country. Before the discovery of the virus, the clinical aspects of the disease were farther elaborated with a review of the literature. At the same time, one fatal case was described with the pathological changes in the central nervous system. Without virus proof the case cannot be unqualifiedly accepted as an example of acute lymphocytic meningitis and therefore the changes found are not necessarily those compatible with the disease in humans. It is somewhat remarkable that no fatal case has occurred (excepting the one described above) in man in a disease often causing death in the experimental animal. . . .

The epidemic character of the disease is suggested but not proven. In general, acute lymphocytic meningitis tends to appear in the early spring or late summer or autumn; it is probably most prevalent in August and September and is definitely not a winter disease.

The virus causing this rather rare syndrome was first identified by Armstrong and Lillie in 1934. Subsequently a similar virus was reported by Traub, by Rivers and Scott, and by Findlay, Alcock and Stern. There appears to be a close connection between the viruses established by these four sets of investigators. Each virus has been checked against that of Armstrong. In white mice the disease causes a characteristic syndrome with pathological changes in the meninges and in the choroid plexus. . . .

Conclusions.—Acute lymphocytic meningitis appears to be a clinical identity, with a known virus as its cause and a clinical course which justifies its being described as a separate disease. It is probably, however, closely allied to other virus diseases of the central nervous system, such as retrobulbar optic neuritis, myelitis, encephalitis, herpes zoster, and possibly poliomyelitis. There are, moreover, types of peripheral neuritis which are closely related to this syndrome. Patients have been known to exhibit, at various times in the course of their illness, such a variety of symptoms as retrobulbar neuritis, peripheral neuritis, and transverse myelitis, as well as signs of encephalitis and meningeal reaction.

Although the disease was first described by Wallgren in 1925, it was not until 1934 that the etiology was found. In the meantime, however, many clinical descriptions had been given and the disease was coming to be recognized in hospitals. In the last four years a large number of cases have been reported and gradually we are learning something about a new disease, fortunately characterized by a benign symptomatology and lack of late manifestations. Thus it is distinctly different from encephalitis of the epidemic type or poliomyelitis.

Abstract of article by Henry R. Viets, M.D., Boston, *Maine Medical Journal, July, 1938, p. 137.*

MEDICAL ANNALS
of the
DISTRICT OF COLUMBIA

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To The Members of the Medical Society of the District of Columbia:

> "Invest me in my motley; give me leave
> To speak my mind, and I will through and through,
> Cleanse the foul body of the infected world,
> If they will patiently receive my medicine."

With and without the authority and immunity provided by "the motley" robe of privilege for the public leader and public speaker, so many incompatible verbal formulae have recently been prescribed for the world that anyone having some sense of personal responsibility may well hesitate before adding another word, lest this compound become fatally intoxicating.

However, one may venture to offer something having a "synergistic" action, hoping to resolve incompatibilities. Until recently the members of the medical profession justly enjoyed the peace of mind derived from a reasonably good conscience, based upon accomplishments set forth by Dr. Irvin Abell in his presidential address to the American Medical Association, June 14, 1938.

Then there came a time when you were distressed and disconcerted by finding yourself addressed and described in most of the terms synonymous with disapprobation.

Your experience is not so unique as you may suppose it to be.

The Church, the law, and institutions of education are faring likewise.

In fact, any organization or individual that, from proven experience, can speak with authority and give valid judgment, or that by reason of strict discipline and training, can render skilled service, is under the same kind of censorious criticism.

Be comforted, and reassured.

When a patient is frightened, confused or delirious, you do not expect rational utterance or reasonable behavior. You are not surprised or hurt by unmerited criticism, or impossible demands.

So also now, what has been called "the pandemic social psychosis" will pass. Lucidity and rationality will return, if wise therapy is permitted, and true values will ultimately prevail.

A profession embraces learning, understanding, judgment and skill, of such an order and degree that it carries an intellectual content and humane values for society as a whole, in addition to and beyond any immediate utilitarian value.

You are engaged in the practice of a profession, not the driving of a trade.

The oath of Hippocrates is still your code; the Constitution and By-laws of your Society provide a means for making this code effective among its members.

Previous discussion has resulted in clearer definition of your problems and has helped to distinguish between matters of policy and methods of action.

Your committees are engaged in the collection of essential data upon which the Society will base rational action concerning means for broadest service of the highest possible quality.

Important structural rearrangement of organization provides for adequate collaborative functional contact with all phases of the lay public's thought, feeling and action.

So, with the inauguration of the One Hundred and Twenty-first Session of our Society, the prospect is excellent for continued advancement in knowledge, understanding, skill, and service to our patients of every class, with the continued enhancement of the good doctor-patient relation now some 2,000 years old.

In the hope of realizing this expectation, I presume to offer you the formula which Saint Paul gave in his Epistle to The Hebrews:

WILLIAM JOHNSTON MALLORY, A.M., M.D.
President, The Medical Society of the District of Columbia, 1938–1939

CAT.

> "Let us hold fast to the profession of our faith, without wavering. . . . And let us consider one another, to provoke unto love and good works; not forsaking the assembling of ourselves together, as the manner of some is."

It has been truly said, "The physician's actions are based upon faith, faith that causation is universal, faith that all effects have causes and all causes have effects, and faith that beneficial results will follow the discovery of truth . . ." whether that truth be discovered in the laboratory test-tube or in the confused babbling of the psychotic patient.

Let us continue to remake medicine in scientific assembly by finding more truth.

The consideration of personal good will, esteem and confidence implied by your selection of the incoming president, is prized above all things, but its usefulness may be and should be multiplied a thousand fold by the manifestation of the same good will, esteem and confidence between each and every member of the Society.

This will become apparent in performing the important duties which lie before you.

The prime purpose of our organization is the provocation of each other to the good work of increasing knowledge and skill, and so elevating the standard of practice and the societal value of our services.

No organization spends more time or exerts more enthusiastic endeavor in this direction, with so much satisfaction and pleasure, than does the Medical Society; none spends less effort and skill in merchandising its services.

Every effort will be made to continually advance the interest and work of the scientific program, and to inform the public on matters of vital interest.

For this purpose it is not sufficient that you "assemble yourselves together," participate in the scientific program, or join in the discussion of necessary business. Two men may occupy adjacent seats and nevertheless be as far apart as are the poles.

So it sometimes comes to pass that the blighting curse of much good-intentioned social endeavor is the futile insistence of divergent opinion upon nonessential details of policy and method, when major objectives of great communal worth stand within easy reach of united action.

The recent broad and inclusive discussions have revealed that there are many enterprises worthy of accomplishment, in which we can collaborate with civic organizations and public health agencies. Toward these ends we may well labor.

Agree speedily.

William Johnston Mallory

WILLIAM JOHNSTON MALLORY, A.M., M.D.

Dr. William J. Mallory, the seventy-second President of the Medical Society of the District of Columbia, assumed office on July 1, 1938. Born in Goochland County, Virginia, in 1874, the son of James H. and India M. Barker Mallory, he moved to Washington, D. C., at an early date, marrying Miss Helen C. Slater, daughter of Isaac C. Slater of the District of Columbia on May 2, 1907. Dr. Mallory's professional career, combining the practicing of his specialty of internal medicine and teaching in the George Washington University School of Medicine, although continuously centered in the city of Washington, had its initiation in Civil Hospital, Manila, where he served as House Surgeon; later he was Attending Physician and Surgeon from 1904 to 1907 at the Government Sanitarium, Baguio, Benguet, P. I. He obtained the degree of M.D. from George Washington University in 1903, in 1914 the degree of Master of Arts. Extensive postgraduate work included Saint George's Hospital Medical School, London, January–March, 1908; Hospitals and Clinics of Berlin, 1908–1910. At an early time in his career Doctor Mallory became interested in medical society organization. Services rendered to the Medical Society of the District of Columbia have been distinguished, notably as a member of the Executive Committee for 3 years, and as Chairman, successively, of the Program, House, Nominating, Periodic Health Examinations and Obituary Committees. Eight other committees, including Bequests, Public Information, Library, Hospitals, have received the benefit of his service. In 1929 he was elected Vice President. In 1925 Dr. Mallory was delegate to the Committee on Prevention of Goiter, Public Health Service, Atlantic City, N. J.

In national organizations he has served as First Vice President, also as Secretary, 1925 and 1929, of the American Therapeutic Society. He is a Fellow of the American Medical Association and the American College of Physicians; senior member, American Gastroenterological Association, serving as Secretary, 1927–1929; a member of the American Association for the Advancement of Science. Dr. Mallory is a member and former President of the George Washington University Medical Society; Medical Society of Virginia, District of Columbia and Maryland; Clinical Society of the District of Columbia; and Washington Medical and Surgical Society. In the latter Society he has been elected a Fellow.

In the George Washington University School of Medicine he is Professor of Medicine and Chief of Medical Service of George Washington University Hospital. He is serving as consultant, United States Veterans Bureau Diagnostic Clinic.

Dr. Mallory served as Captain, Medical Corps, United States Army, during the World War. Now he is Lieutenant Colonel, Medical Reserve Corps (inactive), having served in 1924 as Commanding officer, 75th General Hospital.

In his memberships are included the Cosmos Club and the Metropolitan Club.

His contributions to the medical literature are many. On frequent occasions he has rendered papers of high scientific merit before the Medical Society. Dr. Mallory's well-known interest in scientific medicine and its problems, together with his broad background of successful effort will cause his administration to mean much to the individual members of the Society and to the local citizenry.

PERSONNEL OF COMMITTEES
1938–1939

Standing Committees

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Thomas E. Neill, *Vice Chairman*
Don Johnson
Raymond T. Holden

Ex officio

William J. Mallory
Mr. Theodore Wiprud, *Secretary*
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R. Lyman Sexton, *Vice Chairman*
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Arch L. Riddick, *Chairman*
Charles S. White, *Vice Chairman*
Arthur C. Christie
E. Hiram Reede
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Russel J. Jansen
Thomas E. Mattingly
Howard P. Parker
Jesse T. Mann

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Elected by the Society

Herbert P. Ramsey, *Chairman*
J. J. Mundell
William J. Stanton
E. W. Titus
Prentiss Willson

Representing the Health Department

Ella Oppenheimer
J. Bay Jacobs

Representing the Children's Bureau

Edwin F. Daily

Representing the Medico-Chirurgical Society

J. W. Ross

Tumor Registry

Oscar B. Hunter, *Chairman*
Maurice A. Selinger
Tomas Cajigas
Lee McCarthy
Lester Neuman
Henry L. Darner
Eugene R. Whitmore
F. O. Coe
W. Ross Morris

Woman's Auxiliary Advisory

Henry R. Schreiber, *Chairman*
Matthew White Perry
Harry A. Fowler

Nominees from Executive Committee

(*Meeting, July 6, 1938*)

Medical-Dental Service Bureau, Inc.

Board of Directors

Oscar B. Hunter
J. Bay Jacobs
Henry C. Macatee
Arthur C. Christie
James Alexander Lyon
Margaret M. Nicholson
Sterling Ruffin

Central Admitting Bureau for Hospitals

Board of Directors

Arthur C. Christie
Oscar B. Hunter
James Alexander Lyon
Henry C. Macatee
Margaret M. Nicholson
Sterling Ruffin
J. Bay Jacobs
Raymond T. Holden
Howard P. Parker
Joseph S. Wall
Loren B. T. Johnson
A. B. Bennett
Herbert P. Ramsey
Charles B. Campbell
William B. Marbury
P. A. McLendon

Alternates

James A. Gannon
William P. Herbst
S. R. Karpeles
Edith SeVille Coale
Edgar M. McPeak
W. Cabell Moore
Gregg C. Birdsall
John F. Preston
Eugene R. Whitmore

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*On April 7, 1937, pursuant to report from Dr. Herbert P. Ramsay, Chairman of the Subcommittee on Maternal Welfare of the Committee on Public Health, approved by the Society, an Obstetrical Board representing the Medical Society of the District of Columbia and the Washington Gynecological Society was authorized for the purpose of supervising a maternal mortality survey in the District of Columbia. Financial assistance of the Children's Bureau, United States Department of Labor, was pledged.

THE MODERN MEDICAL SOCIETY

It is interesting to note that the trend in the activities of organizations parallels changes in social conditions. This has been more apparent in recent years because economic distress of the people has stimulated many social experiments. And so we find lawyers, ministers, educators, business men and laborers fortifying themselves with better organizations to meet problems confronting their respective groups.

Medicine has for a number of years recognized that organization is essential and that the day when it can concern itself with scientific matters alone is past. Perhaps this is regrettable. Certainly we can understand the attitude of the older practitioner who longs for the comparatively serene days of his early practice. If he is realistic, he knows only too well that they will not return, and that he must adjust himself to a new situation. This he often finds most difficult.

Always an individualist, he chafes under the restrictions that group activity places upon him. Whereas he was formerly content to participate as a listener or a speaker in a scientific assembly, he now finds himself conscripted for services on committees concerned with public health, legislation, economics, sociology, and numerous other subjects, the intricacies of which have been foreign to him. He must devote hours, days and sometimes weeks to investigation of problems which are both complex and baffling; and often he may have good reason to object to the demands made upon his time.

This situation has frequently resulted in the employment of an Executive Secretary. More often than not he is a layman. It would seem that his record has been satisfactory, for there are few medical societies who have employed executive secretaries who have dispensed with their services. If he is capable he can do much for the organization which it cannot do for itself.

Our Society has recently acquired an Executive Secretary. Discussion preceding his arrival would indicate that many of our members are rather vague as to his duties and what it is hoped he may accomplish. Some have referred to him as "business manager," others as "an organizer," and still others as a "contact man."

With the background which our new Executive Secretary possesses he will be more than these designations would imply. As secretary of the Society and committees he will not only keep records of all proceedings but will carry out plans decided upon. Because of his extensive organization experience he will lend valuable assistance to committees in developing their programs.

In general, projects sponsored by the Society will come under his immediate direction. These will be varied and will include public health and educational programs, and the establishment and operation of such agencies as the Society decides to inaugurate. He will be the liaison officer representing the Society in its relations with the public. Supervision of the Society's office will also be assigned to him. He will lend all possible assistance to the editors of the Medical Annals in the further development of the Society's official publication. Mention should also be made of the personal assistance he will be in a position to give members.

To attain maximum efficiency, partial reorganization of the present committee structure of the Society will be necessary. Recommendations have already been made to the Executive Committee along this line. We are certain these will meet with the hearty endorsement of the Society, for they are based on the successful experience of other medical societies.

We feel that there is every justification for the feeling which has been expressed in many quarters that our Society will now attain a maximum efficiency and effectiveness. However, more than confident hope is necessary. Readjustments in our organization and the employment of an Executive Secretary are in themselves not sufficient. There must be tangible evidence of confidence in the new program on the part of the membership. This can be best indicated by a willingness to lend a hand, whether it be by serving faithfully on committees or by displaying an active and thoughtful interest in the Society's activities.

WHERE THE DOCTORS DO STAND*

The American Medical Association is being hammered over the head editorially in some newspapers because it did not go pell-mell for state or socialized medicine in its San Francisco Convention. . . .

This kind of comment makes it all the more necessary to understand where the Association drew its lines, what it did and what it refused to do. . . .

The Association did refuse to throw the doors wide open to state medicine by indorsing some vague plan that would make the care of indigent and border line cases, and the whole development of medicine, a burden on public treasuries, to be met by the dictatorship of bureaucracy over medical practice. If that be reaction, this country ought to be thankful for it. . . .

The Association wants to keep the job within the medical profession and it thinks the state and local societies are the ones to do it. And it can be done that way. It is being done in Milwaukee County. Free care under medical decision for the truly indigent and budgeting for the border line cases—that is, border line cases pay what they are able to pay and no more—this plan is working in our own area. Recent surveys have not disclosed one case of need that was not met. . . .

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* Extract from Editorial, Milwaukee Journal, June 26, 1938.

WHO IS RESPONSIBLE FOR MEDICAL CARE OF THE PEOPLE?*

A. C. Christie, M.D.

The question which is the subject of this paper has been answered in recent times in various ways. Some say that the maintenance of health and the providing of medical care are fundamental functions of government, while at the other extreme are those who insist that individuals are responsible for their own care just as much as they are to furnish for themselves food and shelter.

The question is not a simple one. It is in fact as complex as the society in which we live and the economic system of the modern industrial age.

That government has a definite responsibility for the preservation of health and even for the medical care of certain classes of individuals every informed person must admit.

Many attempts have been made to define the limits of government responsibility. It is clear that it must be responsible for quarantine and other methods of control of contagious disease, must insure a pure food and water supply, and must carry out all of those measures that we now designate as public health.

Nationally, such activities are in charge of the efficiently organized and manned United States Public Health Service. Locally, every community depends upon its Public Health Department. Here in Washington we are unusually fortunate in having an exceptionally well-qualified Health Officer who is already making progress with the serious problems facing him, although he has occupied his position for a relatively short time.

It is not my intention to go into the question of the duties of the Health Department, although every practicing physician should be thoroughly informed about them. It is especially important for us as physicians to have accurate information about such activities whenever they include the actual medical care of the sick. You are aware of the fact that our Health Department now has complete charge over our municipal hospitals including Gallinger and the Tuberculosis Hospitals, that it maintains a visiting nurse service for the indigent in their homes, and that appropriations have been made for two of the health centers recommended by the Department for the clinic care of the indigent who do not require hospitalization. The facilities for hospitalization, nursing, and clinic care are far from adequate for a city the size of Washington, to say nothing of home care for the indigent, but we can congratulate ourselves that headway is being made. Up to this point the government is plainly responsible to support through tax funds the public health activities and the care of the indigent sick. People who are indigent and who must be supplied by the government with food and shelter should also receive their medical care from the same source.

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* Read at the Annual Scientific Assembly of the Society, May 4, 1938.

There is another method of supplying medical care to the poor which has been accepted by communities and which is not a governmental function. For those people who are not completely indigent but who have little or nothing to pay for medical or hospital care most communities make partial provision through philanthropic funds. Here in Washington these funds are paid into the Community Chest and are disbursed to the hospitals and hospital clinics upon the order of the Central Admitting Bureau.

It would seem almost axiomatic that the medical and hospital care of the indigent and of those who are so poor that they have only a bare subsistence wage should be a charge either upon the tax funds or the philanthropic funds of the entire community. I need not tell you that this responsibility is met by communities only in part.

This brings me to discussion of the ultimate responsibility for medical care of the people. It remains true to this very day that whatever part the government takes in medical care and whatever additional help is furnished by community funds, the final responsibility for medical care of all the people rests upon the medical profession of the community. All of the people must receive medical care when they are in need of it, and the only persons capable of giving such care are those of the medical profession. They are in fact the only persons legally permitted to give such care. This responsibility cannot be delegated to, nor can it be assumed by any corporation, organization, or any other persons whatsoever. It is important, therefore, for us to examine from time to time the manner in which we are fulfilling this responsibility.

First, we have a responsibility to care for the poor and the totally indigent. You are aware of the fact, emphasized to you by your everyday experience, that the government and the community have only partly assumed responsibility for those who should be their charges. In the case of the indigent the local government furnishes Gallinger Municipal Hospital but relies almost wholly upon the physicians of the community to furnish medical care gratuitously to those who are hospitalized therein. If the person is sent to a free clinic, there again he is cared for without charge by the physicians of the community, and the same condition prevails in the wards of our community hospitals. Such practices are as old as medicine, and the physician could not, if he would, evade his responsibility to care for the poor without charge. He must continue to do so until that apparently distant day when communities shall be willing to assume at least a part of the burden themselves.

Here in Washington we have made a notable advance during the past 3 years in dealing with the indigent and near-indigent sick. The medical profession, in coöperation with the Community Chest, organized the Central Admitting Bureau for Hospitals and through it has systematized and delimited the problem of hospitalization and clinic care for the desperately poor of our city. This organization is a notable instance of coöperation between several different community organizations joined together to solve one of the problems of medical care. This coöperation has taken place between the medical and dental societies, on the one hand, with the Public Health Department and the Community Chest on the other. It has enjoyed a notable success and is today in full operation at Eighth and Eye Streets, eliminating the waste of numerous organizations which formerly attempted to perform its functions. It is taking a broad view of its responsibilities and is one of the most efficient arms of the medical profession in helping us to give medical care to the poor of Washington.

The Medical-Dental Service Bureau has not enjoyed the complete success that has been the fortune of the Central Admitting Bureau for Hospitals, largely because the post-payment plan which is its central feature has not been made use of by a sufficient number of those who could have benefited by adoption of such a plan. It remains, however, a going concern which is now returning to the societies the loans which were made to establish it. It will completely liquidate these loans in the next few months. Most important of all, it remains an organization under the complete control of the medical and dental societies of this city and will undoubtedly have an important place in whatever complete plan is finally decided upon to enable people of low and moderate incomes to pay their medical bills. We of this Society must permit no minor disagreements upon methods of operation to interfere with our unified support of what we now call our Health Security Administration at Eighth and Eye Streets. It will undoubtedly be an increasingly valuable instrument to enable us of the medical profession to fulfill our responsibility to the indigent and the poor of our community.

I must not leave this subject of medical care for the poor without pointing out to you a fundamental fact which is overlooked by many who advocate various methods for furnishing medical care to this unfortunate class of the population. Their plight is bound up with our total economic situation. A recent survey by the United States Public Health Service has added statistical proof to the fact long-known by physicians that disease is more prevalent among the poor than among the well-to-do. Until the economic condition of this class is improved so that they may have adequate food, shelter and clothing, no amount of medical care will greatly improve their situation. This is a matter that the medical profession can do little about, but it is apparent to us that the main emphasis should be placed upon improving the economic situation of this class of our population. It must be further understood that this entire problem of the care of the indigent is one which cannot be divorced from the total problem of medical care for all the people. It must be considered in all planning for changes in our present methods.

As we further consider the responsibilities of the medical profession it is increasingly evident that we must view them in a very broad and comprehensive way. In the short time available to me today I can hardly more than indicate general principles and perhaps list the methods that we may employ here in our own Society to put them into effect. The entire time could be taken in discussing our responsibilities for the education and training of the members of our own profession.

You who have followed the matter with any care know that great changes have taken place during the past 30 years in medical education in this country. The low standards prevalent at the beginning of the century have been so raised that medical education has now taken on the nature of a university discipline and compares favorably with educational standards in other fields. The young men entering medical practice in this country today are the best that medical training has ever produced anywhere. But no sooner is the doctor fairly launched upon the practice of his profession before he realizes that education is a continuing obligation from which he never escapes throughout his active life. For many years it was thought that he could keep abreast of progress by reading his medical journals and such books as he could afford to buy, by attending the occasional meetings of his medical society, and at long intervals, when he found it possible, by taking a course in some medical center. The advances in medicine in the past few years have been so rapid that the entire profession has now awakened to a new responsibility, namely, to establish means for the regular and systematic postgraduate training of the general practitioner.

There is no better illustration of what is taking place in nearly every part of the United States than this Annual Assembly of the Medical Society of the District of Columbia. There are gathered here not only the members of our own Society, but physicians from the surrounding states, for instruction by our own members and by eminent teachers from other cities. It constitutes an intensive course of instruction that is becoming increasingly valuable as the years pass and which will undoubtedly be enlarged in the years to come. Such assemblies are being held annually in every large city throughout the land. They represent the high points in a widespread program of continuous postgraduate education that is being carried out in nearly every state of the Union. Not only are well-planned courses being given annually at the state university or in some metropolitan center, but in about three fourths of the states extension courses are given to reach every county medical society and every physician even in isolated areas. State health departments are coöperating with the state medical societies to give special instruction in obstetrics and pediatrics as a part of the national child and maternity welfare program, and special societies are assisting in disseminating the latest information on diagnosis and treatment of tuberculosis, cancer, syphilis and numerous other diseases.

It is noteworthy that a large part of this program is directed to the education of the general practitioner, and this in a day when we have heard much about the necessity for group practice and "coöperatives" and wise predictions about the "passing of the general practitioner." It remains as true today as it was when Osler uttered it that "The family doctor, the private in our great army, the essential factor in the battle, should be carefully guarded by the public. Humanly speaking, with him are the issues of life and death, since upon him falls a grievous responsibility in those terrible emergencies which bring darkness and despair to so many households. No class of men needs to call to mind more often the wise comment of Plato that education is a life-long business." The general practitioner is today the very center and foundation of the practice of medicine. The costs of medical care, state medicine, group practice, sickness insurance, must all be studied in the light of their effect upon him. Whatever methods are devised for supplying medical care to certain special industrial or other groups or to certain types of sickness, it will remain permanently true that more than 90 per cent of all medical care must be furnished by the general practitioner. He will undoubtedly continue to do in the future as he has in the past the great bulk of the routine practice of medicine.

One of the most important results from the renewed interest in the education and advancement of the general practitioner is a unification in medical practice which will have beneficial results from both the medical and economic aspects. Some years ago Dr. Rappelye, now Dean at Columbia, wrote as follows: "Studies of the needs and demands for medical services seem to show quite clearly that about 85 per cent of medical needs are for six general groups of disorders, for the usual care of which a properly trained physician should have no difficulty. Some outside assistance is needed occasionally and should be secured on the advice of the patient's physician. Many patients do not need the services of specialists; patients, physicians and the public should be made to realize that."

With the present rapid improvement in the education of the general practitioner it is increasingly true that the services of specialists are needed only in a relatively small percentage of illnesses. No one will deny that specialism has been a necessary development in medicine and that it has had beneficial results, but the profession has realized for some years that specialism must be brought under control and integrated with general medical practice. The movement to accomplish this desirable end is now well advanced through the formation of national examining boards for every one of the specialities. Twelve boards are now fully established and their activities correlated by an Advisory Board for the Specialties which acts in close relationship with the Council on Education and Hospitals of the American Medical Association. These boards conduct exacting examinations and finally give certificates to those whom they find qualified to practice the specialty in which they claim proficiency. The medical society of each community will soon be able to have a registry of all qualified specialists in every branch of medicine, available to the profession and to the public for its protection.

It is apparent, then, even from such a general statement as the foregoing, that the medical profession is fully alive to its responsibilities for the continuing education of its members in every branch of medical practice.

Here in the District of Columbia we have an exceptionally good opportunity to carry out a systematic and continuous program of education of our members. All of us live within easy distance of the Medical Society Building, as contrasted with the physicians of the large or sparsely settled counties throughout the nation. We have in our own membership trained teachers of our two medical colleges, and at our very door is the greatest medical library in the world. It is important that we begin during the coming year to establish continuing courses in different subjects. They could be arranged, as has been done in some counties, so that a course would consist of 8 seminars, a combination of lecture and discussion to be held during the Medical Society's active year from October to June. Such courses given in succeeding years and supplemented by the regular weekly meetings of the Society and the annual postgraduate assembly would assure to every general practitioner an opportunity to keep constantly abreast of his profession.

It is now recognized that instruction in certain aspects of public health, or more properly speaking, prevention of disease, must be given systematically in medical schools. Many of the postgraduate courses given throughout the country to general practitioners are also including various aspects of preventive medicine. This must be done everywhere if we as a profession are to fully coöperate with the Health Department in its preventive work.

Sooner or later, I am convinced, and the sooner the better, a member to remain in good standing in his medical society must show that he is continuously pursuing his education either through the opportunities offered by his society, or elsewhere.

In the few minutes remaining to me, let me discuss very briefly some additional responsibilities which seem to me to have particular importance at the present time. The first may be designated "public relations." It is my conviction that this Medical Society, representing as it does the majority of practicing physicians in Washington, should continuously exert itself to maintain the most cordial relations with the people of this city and should have, as it deserves to have, the confidence of the public at all times. In order to accomplish this the Society must have a program which will constantly create public interest and which will establish this Medical Society as the center of medical interest and authority in this community.

In my opinion we have taken the first important step in such a program by securing a full-time executive secretary. Through him our efforts to secure proper relations with the public, which have been sporadic and unrelated to each other in the past, will become parts of a continuous program. Through him we can arrange for annual series of public lecture courses to be held in this building, such as we offered to the public several years ago but which were not repeated. I look to him to establish a lecture bureau in which will be enrolled a good number of members of the Society who will give carefully prepared addresses to civic, church, parent-teachers', and trade organizations of every kind upon medical and related subjects, and who will be available upon request of such organizations. Through him authoritative information will go constantly to the public press and to committees and members of Congress. He will establish relations with the Health Department which will arrange a continuous program of co-operation between the Health Officer and his assistants and the organized medical profession of Washington. He will work out with the Health Officer a program of active participation of the members of our Society in the stamping out of diphtheria, in the campaign against syphilis, cancer and tuberculosis, and eventually a systematic community plan for medical care of the indigent. At the same time he will be establishing cordial relations with the many organizations which are interesting themselves in various phases of the people's health, e.g., the Society for Prevention of Tuberculosis and the Social Hygiene Society. It is not too much to believe that only a relatively short period of such activity will result in establishing this Society as the leader in the health program of this community. Such a result has been accomplished elsewhere, and there is every reason to believe that it will come about here. It cannot be done by the efforts of one man, however able and experienced, but by the efforts of all of us who will give unselfish and disinterested service. Our work that is now sporadic, unsystematized and at times badly directed can be welded into a continuous program that will redound to the credit of the medical profession and be of inestimable value to the people of the community. The first essential in such a program is to present to the new executive secretary, when he begins his work, a unified Society.

In conclusion, I shall only mention that further responsibility of the medical profession which is, after all, its most important obligation, namely, the medical care of the great middle class of the population which is the backbone of American citizenship. In the past we have fulfilled that responsibility to the satisfaction of the great majority of the people and with great benefits in the health of the people and the progress of medical science. Recently a small number of people have carried on a campaign for radical changes in our system of medical practice and especially for the establishment of different types of health insurance. They are not agreed among themselves as to which type of health insurance is the best, the voluntary or compulsory type. Undoubtedly the amount of argument for either type has been far out of proportion to its importance or possible value. The opinions of the majority of the medical profession with regard to them are well-known and need not be repeated here. It is still our belief that sound methods of insurance can be applied with proper limitations to the problems of medical care. The profession of this city has supported unqualifiedly the group hospitalization plan which Group Hospitalization, Inc., has made so successful and popular here. It is a significant fact that a few of the group hospitalization plans in various parts of the country included in their promised benefits some type of medical care and that they are now discovering the unsoundness of such a provision. Some of them which have this unsound provision are now taking steps to limit their benefits to hospitalization. The wisdom of the Washington board of directors of Group Hospitalization in excluding every kind of medical care from its benefits is already apparent. This simply illustrates the difficulties that surround every plan of voluntary group health insurance.

The study that is being made by a committee of this Society to explore the possibility of recommending a limited indemnity type of health insurance is being made with the greatest care and thoroughness. The matter is of too great importance to permit hurry. Let me repeat that, although it is a part of the profession's responsibility to explore every avenue that may give help to the middle income class of people, it is our conviction that the value of health insurance has been greatly exaggerated and its potential evils minimized. At its best it offers only very limited help in the total problem of medical care and prevention of disease.

The surest path to future progress is to continue to improve our system of medical education, to develop the means for prevention of disease, to cement the relations of the medical profession and the public, to devise systematic plans for the care of the poor, and finally to adopt such insurance plans as will not interfere with medical progress or lower the quality of medical care.

This Medical Society has a great opportunity to serve the profession and the community in the years immediately ahead of it. We have simplified our organization in a way which will facilitate our work, and we are obtaining the services of a man of real ability who is highly qualified by experience to organize and direct our activities. It is vitally important for us to take a broad view of the tremendous responsibility that rests upon us as the medical profession of the Nation's Capital and to set aside as unworthy every consideration of personal convenience or prejudice. No defeatist attitude concerning "state medicine" or any other threat to our ideals should prevent us from pursuing a constructive course such as I have here inadequately outlined.

DIGEST OF REPORTS OF SUBCOMMITTEES OF THE COMMITTEE ON PUBLIC HEALTH

Subcommittee on Conservation of Vision

Continued efforts are being made to obtain statistics on myopia in the District of Columbia Public Schools, which now appear to be unobtainable or incomplete. The danger of inflicting serious eye injuries by indiscriminate use of air rifles is stressed. The problem of squint, its early recognition and treatment, is again emphasized. Optometrists or commercial opticians have been alleged to use an individual with an M.D. degree for purpose of avoiding the law governing the practice of ophthalmology. Investigation of this matter was made by the Committee. A chief offender was said to have left the city pursuant to the Committee's efforts.

Subcommittee on Sanitation

It is noted that the total population of the District of Columbia has increased 150,000 in the past 5 years, adding much to the problems of sanitation.

1. *Overcrowding.* The area north of Pennsylvania Avenue between North Carolina Avenue and Seventh Street, shows much overcrowding owing to influx of people moved out of alleys and so-called slums. Infectious disease incidence increased in this area.

2. *Sanitary Bureau of the Health Department has been efficient.* Cleanliness of eating utensils, and hygiene of food handlers have been improved through rigid inspections. Results: 50,000 bacteria in glass rim reduced to 500. (Hemolytic streptococci and pneumococci organisms frequently found; an instance of the tuberculous, one third of the spoons used show tubercle bacilli.) Barber Shops are regulated the barbers being required to have annual physical examination.

3. *Milk and cream handling.* Above 99 per cent coming to the District of Columbia is pasteurized. Bacterial count of milk has been reduced from 10,000,000 per cc. in 1910 to an average of 7,000 in 1938.

4. *Sanitary engineering.*

(a) Five hundred to 600 wells in the District of Columbia, with no typhoid traced to this source.

(b) There are 1,800 privies in the District of Columbia, cleaned regularly. Material is dumped in sewers. A steady progress is made in the installation of sanitary plumbing as replacement.

(c) Sewerage Treatment Plant is located at Blue Plains. A 4-hour sedimentation is followed by effluent discharge in the Potomac River opposite Alexandria. The sediment digested 30 days is taken to Lorton. Gas evolved operates gas engines, generating enough power for plant operation.

(d) Rock Creek is not contaminated in the District of Columbia. Steps are being taken to avoid Maryland pollution.

(e) Such items as garbage and trash collection have insufficient appropriations. There is a real demand for ashes for filling in.

(f) Mosquito control through use of oil and drainage is regularly being carried out.

Subcommittee on Mental Health

The Subcommittee on Mental Health was active in bringing about the passage of Senate Bill 1225, changing the procedure in admission of patients to Saint Elizabeths Hospital.

Subcommittee on Venereal Diseases

I. Affecting Gallinger Municipal Hospital:

1. Recommended: Increase of funds for laboratory personnel.
2. Protested policy of discouragement of malaria treatment in C.N.S. syphilis. Conferences with the Health Department have accomplished results.
3. Recommended: Addition of male nurses to nursing personnel.

II. Health Department:

1. Protested lack of follow-up of malaria treated cases.
2. Recommended: Pick-up service for Wassermann tests and broadening of policy of dispensing of antiluetic drugs.
3. Establishment of Central Registry for Syphilitics.

III. New Legislation.

1. Law requiring blood tests before marriage.
2. Oppose law which would give public funds for payment of private physicians caring for indigent patients.

IV. Health Education:

1. Educational campaign in Government bureaus, with the slogan *"Go to your Private Physician for Blood Tests and Advice."*
2. Placing of exhibit at the Annual Scientific Assembly of the Medical Society. This was accomplished.

Subcommittee on Maternal Welfare

The Subcommittee on Maternal Welfare has concerned itself with the following items during the past year:

1. Qualifications of Obstetricians

The Committee inquired into the rules governing the practice of obstetrics in hospitals through a form letter. The replies indicated that privileges extended are rather proportionate to the capability and qualifications of the individual members of the courtesy staff.

2. Layman's Reaction to Film "The Birth of a Baby"

The film, "The Birth of a Baby," was shown to a select group of citizens. Many of those present submitted comments as to their reaction, and whether they thought the film should be shown publicly in this city. The comments are in the possession of Dr. Herbert P. Ramsey, Chairman, in charge of the committee that arranged for the showing of the film. The interesting data accumulated will probably be utilized by Dr. Ramsey at a later date.

3. Uniformity of Obstetrical Charts

The advisability of having a uniform obstetric clinical chart in all hospitals received some consideration. It is believed that this would have definite advantages, and the committee is hopeful that such arrangements may be completed.

SCIENTIFIC PROGRAMS

With all that is being contemplated and in fact already has been accomplished in Society reorganization for more effectively handling the Society's special problems, by no means has there been any diminishing of effort in preparing for the coming year's program for scientific meetings. In all there are 19 Wednesday evenings, on the following dates: October 12, 19, 26; November 9, 16, 30; December 14; January 11, 18, 25; February 8, 15; March 8, 15, 22, 29; and April 12, 19, 26; before the two whole days devoted to the Annual Scientific Assembly on May 3 and 4. The programs will consist of symposia on timely subjects, papers revealing research work in many fields of medical activity, and presentations by the special scientific sections of the Society. It is contemplated that the smaller local societies will be invited to participate more prominently in the programs. A limited number of out-of-town guest speakers, according to established custom, will be included. The Society, as suggested by the foregoing plans, will operate under its auspices an effective postgraduate course for its members and the medical practitioners in the contiguous areas of the District of Columbia. The initial meeting for the year, to be held on the evening of October 12, offers a symposium on "Spotted Fever in Washington and its Environs." Clinical phases will be adequately discussed with a comprehensive presentation of the pathological and epidemiological aspects by local practitioners and physicians of the United States Public Health Service.

Scientific sections and also individual members who have papers or case reports in contemplation should make contact with the Program Committee so that their work may be considered for proper integration in the general plan for the scientific activities of the Society during the coming year.

QUESTIONNAIRES

Recently the members of this Society have been approached through questionnaires from the Society's office with the object of getting pertinent information affecting health problems. The number of returns has been most gratifying. This will be interpreted to indicate the coöperative spirit which pervades the Society and the general desire present of submitting dependable data for subsequent evaluation. Questionnaires have been properly classed on occasion as nuisances and they are when each query is not well conceived and the main objective has no general appeal. Poorly thought out questionnaires do not receive ready and enthusiastic response.

NEWS AND PERSONALS

The Jacobi Medical Society elected the following officers to serve for the fiscal year, 1938–1939:

David H. Kushner, *President*
Gilbert Ottenberg, *Vice President*
Isadore Levin, *Secretary*
Aaron Nimetz, *Treasurer*

The New Federal Food, Drug and Cosmetic Act became law on June 25, 1938,* when it was signed by the President. Its general provisions will become effective one year from that date.

Important respects in which the measure differs from the present act of June 30, 1906, are:

1. The new law has jurisdiction over all cosmetics except toilet soaps. This means that the American public will be protected against dangerous cosmetics such as eyelash dyes that have been known to cause blindness.
2. Brings therapeutic devices under control. In the past, many curative claims have been made for devices such as electric belts which have no value.
3. Regulates drugs intended for diagnosing illness or for remedying underweight or overweight, or otherwise affecting bodily structure or function. Included in this group are the so-called "slenderizers," many of which have caused blindness and death.
4. Requires adequate testing of new drugs for safety before they are put on the market. The elixir of sulfanilamide which caused the death of nearly 100 persons last year emphasized dramatically the need for this provision.
5. Provides for the promulgation of definitions and standards for foods. The old law contained no such authority except for canned foods. This means that the definitions and standards which under the old law were not binding, but merely advisory, will now have legal force and effect.
6. Increases penalties for violations. Under the old law the maximum fine for the first offense was $200. Under the new act a first offense may be punished with a fine of $1,000 or one year imprisonment or both. For subsequent offenses under the old law the maximum fine was $300 or one year imprisonment or both. Under the new law this penalty is increased to a maximum of $10,000 or three years imprisonment or both. Even for first offenses where the court finds evidence of fraud or deliberate intent to violate the act the maximum penalties are $10,000 fine or three years imprisonment or both.
7. Provides authority for the Federal courts to restrain violations by injunction.
8. Eliminates the necessity for proving fraudulent intent in the labels of patent medicines. Under the new law any such medicine proved to be worthless may be removed from the market.
9. Requires drugs intended for use by man to bear labels warning against habit formation if they contain any of a list of narcotic or hypnotic habit-forming substances, or any derivative of any such substance which possesses the same properties.
10. Requires the labels of non-official drugs (those not listed in the Pharmacopoeias and Formulary) to list the names of the active ingredients, and in addition to show the quantity or proportion of certain specified substances.

Specifically the new law will have the following effects on food and drugs:

1. Does not contain the "distinctive name" joker of the old law under which any food not injurious to health can escape control.
2. Brings under control drugs used in the diagnosis of disease and drugs intended to affect the structure or any function of the body.
3. Prohibits traffic in drugs and devices which are dangerous to health under the conditions of use prescribed in the labeling.
4. Prohibits traffic in new drugs unless such drugs have been adequately tested to show that they are safe for use under the conditions of use prescribed in their labeling; authorizes exemption from this requirement of drugs intended solely for investigational use by qualified scientific experts.
5. Requires labels of official drugs—i.e., drugs recognized in the United States Pharmacopoeia, National Formulary or Homeopathic Pharmacopoeia of the United States—to reveal any differences of strength, quality or purity from the official standards. (The old law requires merely that the label bear a true statement of the strength, quality and purity of the drug, without showing the difference from the official standard.)
6. Requires drugs intended for use by man to bear labels warning against habit formation if they contain any of a list of narcotic or hypnotic habit-forming substances, or any derivative of any such substance which possesses the same properties.
7. Requires the labeling of drugs and devices to bear adequate directions for use, but authorizes regulations exempting drugs and devices from this requirement where it is not necessary for the protection of the public health.
8. Does not contain the fraud joker in the old law under which the Government must prove that false claims of curative effect on the labels of patent medicine were made with wilful intent to deceive.
9. Requires official drugs to be packaged and labeled as prescribed by the Pharmacopoeias and Formulary.
10. Defines non-official drugs as illegal if the standard of strength differs from the standard claimed. (The old law prohibits only those which *fall below* the strength claimed.)
11. Requires that antiseptics possess germicidal power.
12. Requires the labels of non-official drugs to list the names of the active ingredients, and in addition to show the quantity or proportion of certain specified substances. Authorizes regulations prescribing exemptions from this requirement when compliance is impracticable.

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* Abstract, Bulletins, United States Department of Agriculture.

Immediately upon approval of the Act by the President on June 25, 1938, the following provisions became effective:

The prohibition against drugs which are dangerous to health when used in the dosage, or with the frequency or duration prescribed, recommended or suggested in the labeling.

The prohibition against the introduction of new drugs before an application for such introduction becomes effective.

The prohibition against cosmetics which may be injurious to users under the conditions of use prescribed in the labeling or under such conditions as are customary or usual. However, poisonous coal-tar hair dyes which would be exempted under the proviso of this requirement if they bore the warning label prescribed by the statute will not be subject to action by reason of their failure to bear the prescribed warning until ninety days after the date of approval.

American Association for the Study of Goiter will hold its annual meeting at the Mayflower Hotel, Washington, D. C., September 12–14, 1938, in conjunction with the Third International Goiter Conference. The general topics for the 3 days will be respectively, "Endemic Goiter," "Thyroid in Relation to Endocrinology and Metabolism," and "Hyperthyroidism." Inclusive among the speakers are noted: Drs. O. P. Kimball, Cleveland, Ohio; H. Eggenberger, Herisau, Switzerland; Roy D. McClure, Detroit, Mich.; J. deJ. Pemberton, Rochester, Minn.; Roy G. Hoskins, Boston, Mass.; Erich Schneider, Freiburg, Germany; George W. Crile, Cleveland, Ohio; Richard B. Cattell, Boston, Mass.; J. H. Means, Boston, Mass.; Frank H. Lahey, Boston, Mass.; Elliott C. Cutler, Boston, Mass. A final program will be available at the time of the meeting and will be distributed to all attending physicians at the registration desk on the morning of September 12.

Dr. Solomon Katzenelbogen has recently been appointed as Director of Laboratories and Research at Saint Elizabeths Hospital, Washington, D. C., effective July 15, 1938. Dr. Katzenelbogen was associated with the Henry Phipps Psychiatric Clinic in Baltimore since 1928, and is at present Associate Professor of Psychiatry at Johns Hopkins University Medical School. He is well known for his numerous contributions to the literature of psychiatry, and his interests cover a large field within that specialty.

REPRINTS RECEIVED

The following reprints have recently been received for which due acknowledgment is made:

"Boeck's Sarcoid. Report of a Case and Brief Review of the Literature." F. J. Eichenlaub, M.D., and I. Lewis Sandler, M.D., American Journal of Roentgenology and Radium Therapy, April, 1938.

"The Kreutzer Sonata. A Problem in Latent Homosexuality and Castration." Ben Karpman, M.D., Psychoanalytic Review, January, 1938.

"Crime and Adolescence." Ben Karpman, M.D., Mental Hygiene, July, 1937.

"Protamine Insulin as a Contributing Factor in the Death of a Diabetic Patient with Cerebral Arteriosclerosis." Janvier W. Lindsay, M.D., E. Clarence Rice, M.D., Maurice A. Selinger, M.D., and K. Hammond Mish, M.D., Annals of Internal Medicine, June, 1937.

"Diabetic Surgery at the Garfield Memorial Hospital, from January, 1924, to June, 1936, Inclusive." Janvier W. Lindsay, M.D., E. Clarence Rice, M.D., Maurice A. Selinger, M.D., and K. Hammond Mish, M.D., Virginia Medical Monthly, December, 1937.

"Celiac Disease." Joseph S. Wall, A.M., M.D., International Clinics, Vol. 1, Series 48, 1938.

"An Analysis of the Mortality in Acute Empyema Thoracis." Charles Stanley White, M.D., and J. Lloyd Collins, M.D., Southern Medicine & Surgery, April, 1938.

"Complete Avulsion of the Scalp and Loss of the Right Ear. Reconstruction by Pedunculated Tube Grafts and Costal Cartilage." James A. Cahill, Jr., M.D., F.A.C.S., and Philip A. Caulfield, M.D., Surgery, Gynecology and Obstetrics, February 15, 1938.

"The Possible Relationship of Chronic Cystic Mastitis to Malignancy." James A. Cahill, M.D., and Philip A. Caulfield, M.D., Southern Medical Journal, March, 1938.

"Ocular Disturbances Associated with Experimental Lesions of the Mesencephalic Central Gray Matter. With Special Reference to Vertical Ocular Movement." Ernest A. Spiegel, M.D., Philadelphia, and Norman P. Scala, M.D., Archives of Ophthalmology, October, 1937.

"Reaction and Specific Gravity of the Urine in Relation to Nephritis (A Study of Ten Thousand Urinalyses)." Edwin E. Ziegler, M.D., Washington, D.C., and Arthur T. Brice, A.B., San Francisco, Calif., Annals of Internal Medicine, November, 1937.

"Presacral Neurectomy for Certain Vesical Conditions." O. Hugh Fulcher, M.D., F.A.C.S., West Virginia Medical Journal, October, 1935.

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THE MODERN TREATMENT OF SYPHILIS

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In late syphilis, strength of treatment lies in individualization. In contrast to late syphilis, the management of early syphilis is amenable to a considerable degree of routinization, standardization, and mass technic. Such an attitude is foreign to the physician in general practice. He treats every disease by the case. Thus it was with some trepidation that the Coöperative Clinical Group announced general principles for treatment of early syphilis. Nonetheless, these principles have so wide a degree of applicability that they can be formulated into definite rules and systems for all but universal use.

Standardization is made easy and acceptable because of the clear definition of the aims possible at the early stage of the disease. Again, in contrast with early syphilis, the aim in the period of latency and late manifestations is preventive and symptomatically curative rather than radically curative. The period of infectiousness and transmission past, "cure" in the complete sense is probably out of the question.

In early syphilis, on the other hand, the evidence of the laboratory and the more slowly accumulated presumptions of clinical experience indicate that radical or complete "cure" is possible by an appropriate treatment technic. From the viewpoint of public health, infectiousness becomes the crucial issue. Hence the two-fold aim in early syphilis may be crisply defined as first, the prevention of transmission by treatment, and second, the individual "cure." As will be presently indicated this aim is accomplishable to a considerable degree.

The use of quotation marks with the term "cure" expresses its status as a clinical presumption rather than as an established fact. The only definite evidence of "cure" of syphilis in man is reinfection. Tissue transfer, the best criterion in the experimental animal, has not yet been shown to be applicable to man. Necropsy evidence is of no practical value in attempting to decide the question of "cure" in a living patient.

TREATMENT AND THE PATIENT'S WELFARE

Prolonged clinical observation is the only satisfactory standard of "cure." In concrete terms this means, immediately following the completion of treatment, a full year of probation during which the patient receives no treatment, develops no lesions of syphilis, and the blood serologic reaction tested at frequent intervals (at least every 2 months) remains permanently negative. At the end of the year a complete physical and neurologic examination must show no evidence of progress in the disease, especially in the nervous system or cardiovascular apparatus. Furthermore, the absence of involvement of the nervous system must be demonstrated, not only by freedom from neurologic signs but also by a negative examination of the cerebrospinal fluid. A physician who dismisses a patient as "cured" without a routine spinal puncture is professionally negligent.

The proportion of "cures" when treatment is begun in the seronegative primary stage (diagnosis by darkfield or other identification of the Spirochaeta pallida) is 86 per cent. When treatment is not begun until the so-called "seropositive primary stage," "cure" is attained in only 64 per cent of the patients. This represents a clear loss of 20 per cent in outlook for "cure" by the delay. If the patient goes on to the development of a secondary eruption, "cure" is, however, attained in 82 per cent of the patients.

Fixed positiveness of the blood in early syphilis is a serious matter, for 30.6 per cent of cases in this condition have been found to have neurosyphilis, while among those in which the Wassermann reversed to negative only 18 per cent had neurosyphilis. All other forms of relapse and progression are from 2 to 5 times as frequent among those who are not rendered Wassermann-negative as in those who are. Fixed positive blood tests develop in 3.8 per cent when treatment begins in the seronegative primary stage, in 14.5 per cent in the seropositive primary stage, and in 13.3 per cent in the early secondary stage.

It is apparent, therefore, that the duty of the conscientious physician to the individual patient, even more than his duty to the public health, demands the earliest possible diagnosis, as well as the earliest possible application of treatment.

It may now be said with positiveness that the old practice of administering treatment in early syphilis by fits and starts conditioned on the Wassermann report of the blood, is pernicious. Even the introduction of a few weeks of complete rest from treatment into the management of the first 18 months of the disease is likely to be profoundly injurious. The patient who lapses or escapes treatment during this period is his own worst enemy. No rest intervals and a régime in which the patient is constantly receiving either an arsenical or a heavy metal during the first year of the disease or longer is the best and safest modern practice both in the interest of the patient and of the public health.

The data supporting these rather forceful and uncompromising statements are clear-cut. The continuous method secured the reversal of the blood Wassermann reaction by the end of a year in 81.8 per cent, whereas the intermittent scheme of treatment with rest intervals of a month or more secured only 37.3 per cent of reversals, and irregular treatment gave only 4.7 per cent of Wassermann reversals within a year. It appears, then, that that great "bugbear" of physician and patient, the fixed or irreversible positive Wassermann reaction in treated early syphilis, lies at the door of the rest interval or lapse from treatment rather than in any peculiarity of disease or drugs.

It has become inexcusable either to shorten treatment because the patient was seen in the seronegative primary stage of the infection, or because his blood test, originally positive, is reversed to negative within the first year. The Wassermann findings are an unsafe guide to the time of cessation of treatment. "Treat by schedule and not by Wassermann test" is the slogan of the best modern practice.

Standard Treatment Procedure in Early Syphilis

In brief, then, the modern system for the treatment of early syphilis must be continuous; it must employ an arsphenamine and bismuth, the latter intramuscularly; it must call for not less than 20, and unless special resistiveness is encountered, hardly more than 30 injections of the arsphenamine; and in accordance with the principles generally recognized in the treatment of the disease, the system should call for continued treatment including a heavy metal for one year after all symptoms and signs of the disease have disappeared.

In order to determine this endpoint, blood tests should be made at least at the beginning and end of each arsphenamine course and the

TABLE 1

A Scheme of Treatment for Early Syphilis[1]

DAY OR WEEK	ARSPHENAMINE	INTERIM TREATMENT	BLOOD WASSERMANN REACTION	REMARKS
Day				
1	0.3–0.6	....	1	Arsphenamine dosage for first 3 injections at level of 0.1 gram for each 25 pounds body weight. Average subsequent dosage, 0.4 gram, men; 0.3 gram, women. In average patient all lesions heal rapidly and blood Wassermann reaction becomes negative during first course. If arsphenamine cannot be used, substitute 8 to 10 doses 0.3 gram silver arsphenamine, or 10 to 12 doses 0.6 gram neoarsphenamine. This applies also to subsequent courses.
5	.3–0.6			
10	.3–0.6			
Week				
3	.4			
4	.4			
5	.4			
6	.4			
7	.4	....	1	
8	....	Bismuth, 4 doses, 0.2 gram and K. I., or Ung. Hg. and K. I.		If mercury is used, note overlap of 1 week at end of first and start of second arsphenamine courses. At this point a few days without treatment may be dangerous. Neurorecurrence.
9				
10				
11				
12	.4	....	1	Arsphenamine starts, bismuth stops. Watch for provocative Wassermann reaction after first dose of arsphenamine.
13	.4	....	1	
14	.4	....	....	Try to prevent short lapses in treatment, especially at this early stage.
15	.4			
16	.4			
17	.4	....	1	
18–23	....	Bismuth, 6 doses, or Ung. Hg. and K. I.	....	Bismuth is better than mercury. Use it if possible. Examine cerebrospinal fluid if patient's cooperation can be secured at about this time.
24	.4			
25	.4			
26	.4			
27	.4			
28	.4			
29	.4			
30–37	....	Bismuth, 8 doses, or Hg. and K. I.	....	
38	.4	....	1	
39	.4			
40	.4			
41	.4			
42	.4			
43	.4	....	1	Patients with seronegative primary syphilis may cease treatment here, if blood Wassermann reaction has always been negative.
44–53	....	Bismuth, 10 doses, or Ung. Hg. and K. I.	....	Note that bismuth or mercury courses are gradually getting longer—4, 6, 8, and now 10 weeks.
54	.4	....	1	
55	.4	....	....	The average seropositive primary or early secondary patient should have at least 5 courses of arsphenamine.
56	.4			
57	.4			
58	.4			
59	.4	....	1	
60–69	....	Bismuth, 10 doses, or Ung. Hg. and K. I.	....	It is safer to finish treatment with bismuth or mercury rather than with arsphenamine.
70–122	Probation	No treatment..........	6–12	Blood Wassermann every month if possible; at least every other month.
123	Complete physical and neurologic examination, spinal puncture, and, if possible, fluoroscopic examination of cardiovascular stripe. Thereafter, yearly physical examinations, blood Wassermann every 6 to 12 months. If the 2 spinal fluid examinations above are negative, this need not be repeated.			

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[1] From Ven. Dis. Inform., 1934, **15**, 159.

patient should be warned of the lack of significance of the negative report from the standpoint of the schedule. Weak positives, after a negative has appeared, should be taken as seriously as strong or fully relapsing positives. A spinal-fluid examination with Wassermann test, cell count, protein estimation, and colloidal gold test should be made before the end of the arsphenamine phase of the treatment. Such a system can be carried through only with adequate tolerance on the part of the patient, and this tolerance should be conserved in every possible way. If it fails, the case becomes one for consultation. The same system should be employed whether treatment is begun in the seronegative or seropositive primary, or the secondary stage (Table 1).

The Treatment of Latent Syphilis

The first essential in the management of a patient with latent syphilis is for the physician to assure himself that the disease is actually latent, i.e., that it is producing no symptoms or physical signs, and that the only evidence of infection is a positive serologic test of the blood. This implies painstaking and complete physical examination with special reference to cardiovascular and central nervous systems, and a negative routine examination of the cerebrospinal fluid. In patients infected more than 10 years, routine teleroentgenographic and fluoroscopic examination of the thorax is also desirable to rule out clinically unrecognizable aortic dilatation. If lesions of late syphilis can be discovered by these means, the disease is not latent and should not be treated as such.

The studies of the Coöperative Clinical Group have shown that early latent syphilis (within the first 4 years after infection) should be treated exactly in the same manner as early syphilis, using the same drugs and dosage and the continuous method.

This group of patients also includes those who have had the infection more than 4 years. Here the aim of treatment is to increase the probability of "cure" or "arrest" and to decrease the probability of clinical progression or relapse over the probable result if no treatment is given. In addition, treatment aims at the control of the potential infectiousness of the latent syphilitic.

In late latent syphilis (in contrast with primary, secondary, and early latent syphilis), the continuous method of treatment is desirable but not absolutely essential. Rest periods probably do no harm. Maximum results are obtained with about 20 injections of an arsphenamine (neoarsphenamine may be freely used to replace arsphenamine) combined with the use of large amounts of a heavy metal, the latter prolonged over a long period of time.

At the completion of this amount of treatment, the physical examination should be repeated (although the spinal fluid, if originally negative, need not be retested). Assuming physical evidence of syphilis to be absent at original and recheck examinations, and the spinal fluid to be normal, treatment may be stopped at this point regardless of whether the blood serologic test is positive or negative.

With latent as with early syphilis, treatment should be followed by a lifetime of periodic observation.

The natural tendency of true latent syphilis is toward spontaneous "cure," but this tendency is markedly enhanced by treatment. In treated patients followed for 10 or more years, "cure" or "arrest" is accomplished in about 85 per cent, as contrasted with 35 per cent if no treatment is given, and the probability of clinical progression or relapse is reduced from 20 to 30 per cent to 2 to 5 per cent.

Prevention of Syphilitic Infection of Unborn Children

Studies of the Coöperative Clinical Group and others have shown that untreated syphilitic mothers will bear only 16 per cent of normal nonsyphilitic children, the remaining 84 per cent being represented by miscarriages, stillbirths, and living syphilitic babies. These tragedies may be prevented with almost absolute certainty if syphilis in the mother is recognized (routine serologic test of all pregnant women essential!) and treatment begun before the fifth month of pregnancy. Indeed the chance of a syphilitic infant may be markedly reduced if treatment is begun even as late as the eighth or ninth month.

The aim of treatment in pregnant syphilitic women is the prevention of the transmission of syphilis to the infant, not cure of the mother. Unless there are special contraindications, and pregnancy *per se* is not one of them, the continuous method of treatment should be employed in the expectant mother. Arsphenamine and bismuth should be administered in a slightly smaller dosage than advised for early syphilis. These drugs may be given in alternating courses if time permits (treatment started at the fifth month of pregnancy or earlier) or simultaneously if treatment is not begun until the seventh month or later. It should be emphasized again that uncomplicated pregnancy is not a contraindication to vigorous treatment.

The syphilitic mother should be given early and adequate treatment throughout every pregnancy, whether her own serologic test is positive or negative. It must be remembered, however, that treatment during pregnancy alone, even if it protects the infant, is not enough for the mother. After delivery her treatment should be resumed in the manner appropriate to her type of syphilitic infection.

Recommendations

1. Treat every patient with early syphilis for 70 weeks by the continuous scheme of treatment.
2. For early latent syphilitic patients—disease of less than 5 years' duration—employ the same scheme as for early syphilis.
3. Prolong the period of treatment observation in late latent syphilis—disease of more than 5 years' duration—and give a larger number of doses of heavy metal.
4. Begin before the fifth month of gestation to treat syphilis in pregnancy continuously to prevent the transmission of the disease to the unborn child.
5. Adhere to all treatment schedules strictly unless untoward symptoms develop.

CREEPING ERUPTION*

REPORT OF TWO CASES AND BRIEF REVIEW OF THE LITERATURE

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Creeping eruption is a public health problem. It is very probable that many cases are never reported or recognized and that the condition is more widespread than now considered. It is hoped that this paper will stimulate the interest of the proper authorities at our various beaches to attempt to prevent the dissemination of this troublesome infestation.

This paper deals only with Creeping Eruption as originally described by Kirby-Smith, Dove and White[1] and caused by the larval stage of the Nematode Ancylostoma braziliense. The history of the various creeping diseases and their causes, such as the larva of the horse botfly, Gastrophilus, and the larva of the cattle "heel-fly," Hypoderma, have been adequately discussed by the above authors and by White and Dove.[2]

Report of Cases

Case 1: B. J. K., a white man, 24 years of age, consulted me on September 18, 1931, for an "itching, traveling condition" of both hands. His family and past history were irrelevant. On September 8 he had returned from a 2 weeks' vacation at Virginia Beach, Va., and several days later had noticed the lesions.

Examination disclosed an elevated, erythematous, circinate, linear lesion, composed of rather deep, thick vesicles on the palmar surface of the left hand (Fig. 1); 2 similar raised, tortuous, linear lesions on the dorsum of the right middle finger, and a group of 6 deep vesicles on the ulnar surface of the right index finger. In 48 hours the palmar lesion had advanced 3.5 cm.; those on the right middle finger had extended 2 cm.; while the lesion on the index finger apparently had remained quiescent. Most of the advancing was done at night and was characterized by itching for which the patient required a sedative. In 5 days the lesions on the dorsal surface of the right middle finger had progressed by a tortuous course to the volar surface and they were then treated with ethyl chloride. After 17 days of inactivity there was marked edema and erythema of this particular lesion. From October 5 to November 14 there was migration of this lesion interrupted by periods of rest.

Two hematologic reports were normal and showed an eosinophile percentage of only 3 and 4. The causative larva was not found in serial sections of the biopsy.

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* Read at the Annual Scientific Assembly of the Society, May 4, 1938.

Case 2: The second patient was seen on September 1, 1937. The patient, a boy aged 7 years, had visited the Wrightsville Beach of North Carolina on August 8, 1937, and no other beach. Similar tortuous, raised linear lesions were present on the right palm, the penis and the left leg and thigh, on which there were 13 lesions. Several of these areas had become secondarily infected (Fig. 2). The course was much the same as the first case herein reported.

ETIOLOGY

Kirby-Smith, Dove and White,[1] and White and Dove[2] proved that the causative organism of the creeping eruption occurring in Florida was the third stage of the larva of Ancylostoma braziliense. Two hundred biopsies were performed, and the larva was recovered in only 5 instances.

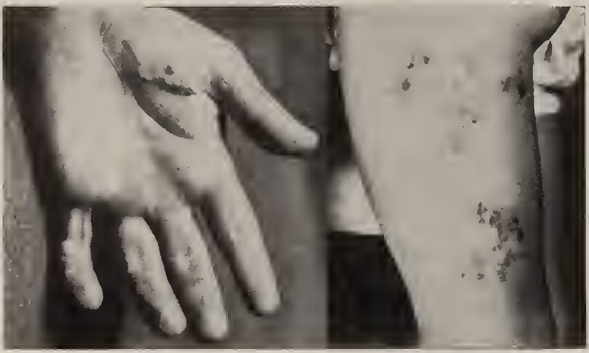

FIG. 1 FIG. 2

FIG. 1. Case 1. Creeping eruption
FIG. 2. Case 2. Creeping eruption complicated by factitious dermatitis.

Price[3] in 1926 was the first to report the adult parasite in the United States. He recovered it from a dog in Texas. The parasite has been found in the small intestine of the dog, cat, man and leopard. The male is 75 mm. long and 220 microns thick; the female is 85 mm. long and 330 microns thick. The eggs are 65 microns long and 32 microns thick. The larvae are approximately 600 microns long and 20 microns in breadth. As many as 250 of these worms have been found in dogs but Darling[4] reported not more than 29 for man. In human cases it is usually a minor infestation along with the Necator Americanus, while in dogs and cats it is frequently found in association with a predominant infestation with Ancylostoma caninum.[5] The eggs pass out in the feces and under favorable conditions of temperature and moisture may show actively motile embryos in 36 hours. A single female may produce from 20,000 to 50,000 eggs a day. Infestation of the host animal takes place either by way of the mouth or skin. The larvae penetrate the skin but do not multiply or reach maturity there. Patients with creeping eruption apparently do not later develop an intestinal infestation with this parasite.

The disease has been produced experimentally in man by Shelmire,[6] and White and Dove.[2] By the application of pure cultures of these larvae to the human skin typical linear lesions and symptoms were produced.

White[7] devised a method of obtaining the larvae from cultures. A watery suspension of a stool containing the eggs was mixed with charcoal and in from 7 to 10 days the larvae were hatched. One drop of the watery suspension (containing about 100 larvae) was applied to the flexor surface of the forearm and a typical eruption developed.

The larvae may remain in the skin for 3 months or more, or spontaneous healing may occur.

The distribution of the eruption in the United States has been confined principally to the coastal plains from New Jersey to Texas, with most of the cases occurring in Florida. In 1927 the first case of creeping eruption was reported from Virginia Beach.[8] In 1928 autopsies performed on 27 dogs at the Jacksonville, Florida, pound showed 26 infected with Ancylostoma braziliense.

Of 50 dogs from the Washington, D. C., pound 96 per cent were found to harbor intestinal parasites but Ancylostoma braziliense was not found and has never been reported in the vicinity of the District of Columbia.[9]

HISTOPATHOLOGIC FEATURES

In all 5 cases of Kirby-Smith, Dove and White[1] the burrow containing the larva was within the prickle-cell layer or stratum mucosum. The larva was more or less coiled and the burrow contained many swollen, degenerating epithelial cells (Fig. 3). Some eosinophiles and lymphocytes were found around the blood vessels of the corium. The sections made in my Case 1 showed the burrow to contain some swollen epithelial cells, eosinophiles and débris within the prickle-cell layer also (Fig. 4). There was a definite perivascular infiltration of lymphocytes, a few polymorphonuclears and many eosinophiles in the subpapillary layer of the corium.

Symptoms

Creeping eruption is characterized by a tortuous, elevated, linear, slightly erythematous eruption. An erythematous, pruritic papular lesion marks the area of ingress and the advancing line is noted in 2 to 6 days. Vesicles are frequently noted. The larva moves from a fraction of an inch to several inches in 24 hours, mainly at night. Often there are periods of rest of several days to a week or more. Marked itching sometimes accompanies the period of activity. Secondary infection may follow scratching.

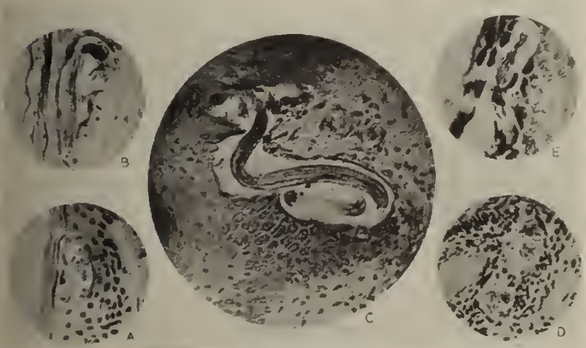

Fig. 3. Creeping eruption; nematodes in burrows. Reduced from a magnification of 480 diameters. (From Kirby-Smith, Dove and White: Creeping Eruption, Arch. Dermat. & Syph., 1926, **13,** 137.)

Diagnosis

The diagnosis of the disease is not difficult in the typical cases but in the secondarily infected states may occasion doubt.

Treatment

Curative. The purpose of therapy is to destroy the larvae, but this is frequently a difficult problem. Thoroughly freezing the suspected area with ethyl chloride is often effective, or compresses of cotton saturated with ethyl acetate may prove curative.

Preventive. All dogs and cats (including pets) should be denied the privilege of beaches. Hall[10] states: "The control of parasites in the dog is necessary and desirable not only for the sake of the dog but for the sake of human health. Prevention is the business and duty of the dog owner. It is largely a matter of sanitation and careful supervision of the dog's habits. This involves supervision of the dog's habits to the extent of not permitting the dog to run at large." Tetrachlorethylene is the standard drug for removing hookworm in veterinary practice.

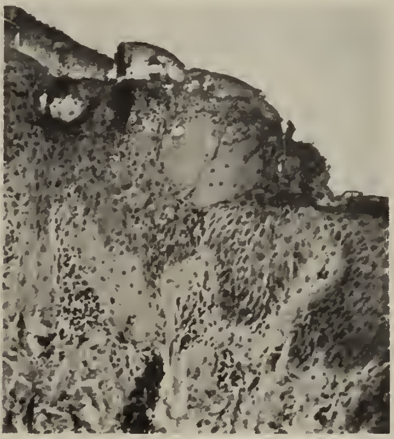

Fig. 4. Case 2. Empty burrow and inflammatory reaction.

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CAUSES OF NEONATAL MORTALITY IN THE DISTRICT OF COLUMBIA*†

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The present study was undertaken by the United States Children's Bureau in coöperation with the Health Department, the Medical Society, and all of the hospitals of the District of Columbia. The purpose of the study was to obtain information regarding the causes of death of infants in the neonatal period (first 30 days of life) in the District of Columbia, in the hope that this information would indicate methods which might be effective in reducing the number of deaths in this age period. The study was begun in 1936 and covered the neonatal deaths which occurred in 1935. It was undertaken with the idea that it might lead to a more complete type of investigation than can be made by means of such a retrospective study alone.

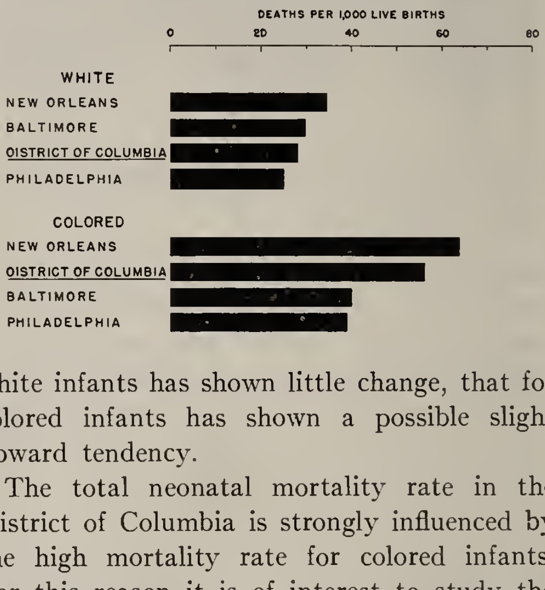
The neonatal mortality rate in the District of Columbia in 1935 was 37 per 1,000 live births, whereas the rate for the United States birth registration area was 32 per 1,000 live births. The mortality rates of a city should not be compared with those of the United States as a whole. The District of Columbia is an urban area with a large colored population and its mortality rates therefore should be compared with those of large cities having a large colored population.

Chart 1 shows the average neonatal mortality rate for the period 1933 through 1935 for both white and colored infants in 3 such cities, Baltimore, New Orleans, and Philadelphia, compared with the average rate in the District of Columbia for the same period.‡ The rate for white infants in the District of Columbia (28.1) was lower than that in New Orleans (34.7) but somewhat higher than that in Philadelphia (25.0). It was nearly the same as that in Baltimore (29.8). For colored infants the rate in the District of Columbia (56.3) was lower than that in New Orleans (63.9) but about 40 per cent higher than the rates in Baltimore (40.3) and Philadelphia (39.2).

Chart 2 shows the trend of neonatal mortality rates for white and colored infants in the District of Columbia over a period of 9 years (1927–1935). The rate for colored infants was definitely higher than that for white infants throughout the entire period. The mortality rate for white infants has shown little change, that for colored infants has shown a possible slight upward tendency.

CHART 1

MORTALITY IN THE NEONATAL PERIOD AMONG WHITE AND COLORED INFANTS; DISTRICT OF COLUMBIA, BALTIMORE, NEW ORLEANS, AND PHILADELPHIA, 1933–35



The total neonatal mortality rate in the District of Columbia is strongly influenced by the high mortality rate for colored infants. For this reason it is of interest to study the causes of death of white and colored infants separately and to compare the findings for the two groups. In this study all analyses have been made separately for white and colored infants.

Information regarding the infants studied was obtained from birth and death certificates, from hospital records, and from interviews with physicians who attended the infants in their homes. Since the study was a retrospective one, certain difficulties were encountered in obtaining all the desired information. It was found that hospital records were frequently incomplete; for example, no clinical diagnosis was recorded for 75 of the 291 infants who died in the hospitals in which they were born, and information from private physicians was sometimes unsatisfactory because too long a period had elapsed between the occurrence of the neonatal death and the interview.

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* From the Children's Bureau, United States Department of Labor.

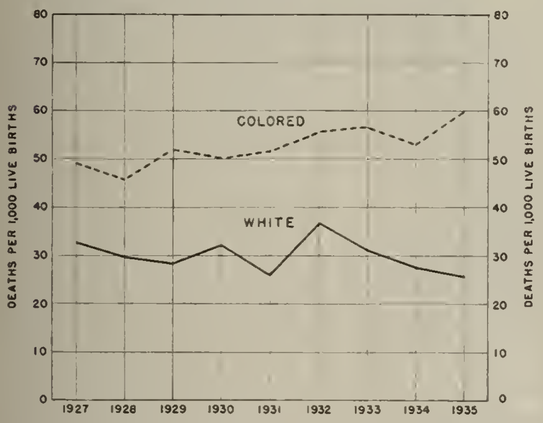
† Read before the Society, April 13, 1938.

‡ The rates in Charts 1 and 2 are based on census reports which do not confine use of the term "colored" to Negroes, as is done elsewhere in this study.

Four hundred neonatal deaths were reported in the District of Columbia in 1935. Three hundred and ninety-two of these deaths were included in this report. Eight were omitted from the analysis, 7 because information was inadequate, and the eighth because the infant was Chinese. Of the 392 infants studied, 209, or somewhat more than half, were colored, and 183 were white.

CHART 2

TREND OF NEONATAL MORTALITY AMONG WHITE AND COLORED INFANTS; DISTRICT OF COLUMBIA, 1927-35



The majority of both the white and colored infants were born in hospitals (white, 86 per cent; colored, 77 per cent). This is not surprising, since a large proportion of all births in the District of Columbia occurred in hospitals in 1935 (white, 92 per cent; colored, 77 per cent). It is interesting to note that most of the deaths of infants born in hospitals occurred before the infant had been discharged from the hospital (white, 96 per cent; colored, 89 per cent).

Analysis of the weight of the infants at time of birth shows that most of the deaths in the first month of life were among infants whose weight at birth was low. Approximately two-thirds of both the white and colored infants who died weighed less than 2,500 grams (white, 69 per cent; colored, 65 per cent). The proportion of very small infants, those weighing less than 1,500 grams, was somewhat greater among white than among colored infants. Approximately one third of the white (35 per cent) but only about one fifth of the colored infants (21 per cent) were in this group.

Weight at birth was, as would be expected, closely associated with age at the time of death. As Table 1 shows, the infants were divided into three groups according to weight at birth, and the proportion of deaths which occurred before the end of 24 hours in the different groups was determined. The proportion of deaths in the first 24 hours is high in the lowest weight group and comparatively low in the highest weight group. The lower the weight the larger the proportion of infants who died during the first 24 hours. This is true for both white and colored infants, but it is interesting that in each weight group there is a tendency for the proportion of white infants who died within 24 hours to be greater than the proportion of colored infants.

TABLE 1

Percentage of Neonatal Deaths among White and Colored Infants in Each of Three Birth-weight Groups According to Age at Death

District of Columbia, 1935

BIRTH WEIGHT (IN GRAMS)	WHITE		COLORED	
	Age at Death		Age at Death	
	Under 24 Hours	24 Hours and Over	Under 24 Hours	24 Hours and Over
	per cent	*per cent*	*per cent*	*per cent*
Less than 1,500	90	10	76	24
1,500 to 2,499	54	46	28	72
2,500 or More	39	61	27	73

The analysis of the causes of deaths proved to be one of the most difficult parts of the study. Since diagnoses based on post-mortem examinations were reported for only 88 of the 392 infants, it was necessary to base the analysis on the clinical diagnoses reported by physicians on hospital records or at personal interview. The analysis includes only 295 of the deaths (white, 131; colored, 164), because clinical diagnoses were not reported for the other 97 deaths (white, 52; colored, 45).

In classifying the causes of death, the rules of the International List of Causes of Death and the Joint Cause Classification have been followed, but certain exceptions have been made. Whereas the Joint Cause Classification used by the Bureau of the Census gives premature birth preference over many other causes of death, in this study premature birth was not assigned as the cause of death unless it was the only cause reported. Also, according to the rules of the International List, deaths attributed to complications of labor and delivery, usually reported in such terms as "prolonged labor" or "difficult delivery" are assigned to birth injury, but in this study such complications have not been accepted as diagnoses of cause of death. If an abnormality of labor or delivery was reported jointly with another cause of death, the death was assigned to the other cause; if it was reported alone, the case was considered undiagnosed.

The causes of death have been classified in six major groups: prematurity, infection, birth injury, congenital malformation, gastrointestinal disturbance, and other and unknown causes. Table 2 shows the relative frequency of these causes of death among both white and colored infants.

As can be seen, prematurity was by far the most frequent cause of death reported. Somewhat more than half the deaths of both white and colored infants were attributed to this cause in spite of the fact that prematurity was not given preference in assigning causes of death. Although it has been stated by some authorities that premature birth should not be accepted as a cause of death, it seems justifiable to accept the physician's diagnosis of premature birth when no other cause can be determined. This is not entirely satisfactory, as is shown by the fact that of the 23 post-mortem examinations reported of infants whose deaths were attributed clinically to premature birth, 10 showed evidence of an additional cause of death, such as infection, although for 13 no cause other than prematurity could be discovered. However, if these infants were born prematurely, this fact was probably at least partially responsible for death even in those cases in which other specific causes were present.

Incidence of causes of death other than premature birth varied greatly among white and colored infants.

Infections, including syphilis, were second in frequency as the reported cause of death among colored infants (19 per cent), but among white infants infections were diagnosed much less often (5 per cent). Pneumonia was reported as the cause of death of 7 per cent of the colored infants but of only 1 per cent of the white infants; syphilis was reported for 6 per cent of the colored infants but for only 1 per cent of the white infants.

TABLE 2

Percentage of Neonatal Deaths Assigned to Specified Causes by Race

District of Columbia, 1935

Deaths of 131 white and 164 colored infants

CAUSE OF DEATH—CLINICAL DIAGNOSIS	WHITE	COLORED
	per cent	*per cent*
All Causes	*100*	*100*
Prematurity	56	53
Infection	5	19
Birth Injury	14	5
Congenital Malformation	11	4
Gastrointestinal Disturbance	1	7
Other and Unknown Causes	13	12

Birth injury was reported second in frequency as the cause of death among white infants (14 per cent), but as the cause of a smaller proportion of deaths of colored infants (5 per cent). In the small number of cases of birth injury in which post-mortem examinations were made (7), the clinical diagnosis was confirmed. That the incidence of birth injury as cause of death is probably greater than is indicated by the clinical diagnoses is shown by the fact that 9 additional cases of birth injury not recognized clinically were found among the 73 infants for whom both clinical and post-mortem diagnoses were reported.

Congenital malformation was reported as the cause of death in 11 per cent of the white and 4 per cent of the colored infants. The congenital defects causing death were of various types, including those of the central nervous system, the heart, and the abdominal wall.

Gastrointestinal disturbances were reported as the cause of death in 7 per cent of the colored and 1 per cent of the white infants. In this group of cases are included deaths attributed to such conditions as diarrhea, the etiology of which was usually not clear. It is appreciated that this is not a satisfactory classification, but because the physicians diagnosed these symptoms as the cause of death they have been included. Such symptoms may indicate infection, but the information at hand will not permit a more definite classification.

Lastly, there were deaths ascribed to a group of miscellaneous causes which accounted for about equal proportions of the deaths of white and colored infants (white, 13 per cent; colored, 12 per cent). Among these were such reported causes as erythroblastosis, asphyxia, atelectasis, and accidents.

To summarize, prematurity was found to be the most frequent cause of death reported during the neonatal period for both white and colored infants. The next most frequent causes of death reported among white infants were birth injury and congenital malformation; but among colored infants infections were reported more frequently than either of these causes.

The higher incidence of infections and gastrointestinal disturbances as causes of death among colored than among white infants probably explains in part the finding that the proportion of the deaths which occurred after the first 24 hours of life was greater among colored than among white infants. The relative importance of these causes for white and colored infants is best seen in a comparison of infants in the same weight group. Among the infants weighing between 1,500 and 2,500 grams at birth who survived the first 24 hours of life, infections and gastrointestinal disturbances were reported as the cause of death of 33 per cent of the colored but of only 17 per cent of the white infants.

In interpreting these figures it must be borne in mind that there are serious sources of error. The analysis is based on clinical diagnosis, which is frequently inaccurate during the neonatal period and which was not reported for all of the infants. The number of deaths assigned to each cause is so small that the addition or subtraction of only a few cases would materially alter the percentage of deaths assigned to a given cause. Moreover, the distribution of deaths as assigned to the different causes represents the findings for only 1 year and cannot be assumed to be typical of other years.

A study of causes of neonatal deaths is of value only if it indicates methods for reducing the number of preventable deaths. In spite of the lack of complete data it would seem clear that certain deaths are preventable.

It is probable that a considerable proportion of deaths due to premature birth and birth injury can be prevented by adequate prenatal care for the mothers. Information regarding whether or not prenatal care was received by the mothers of the infants in this study was inadequate, the number of visits made to a physician for such care being known for only 111 white and 89 colored mothers. Of these, only 40 per cent of the white and 16 per cent of the colored mothers made a number of visits that could be considered sufficient for adequate care (visits averaging 1 per month, beginning before the twenty-fourth week of pregnancy).

Practically all deaths due to congenital syphilis can be prevented by early diagnosis and treatment of syphilis in the pregnant woman. In the comparatively small group of mothers for whom a serologic test for syphilis was reported (69 white and 139 colored) the test was positive for 3 per cent of the white and for 23 per cent of the colored mothers. There were only 5 women (1 white and 4 colored) who were known to have received antisyphilitic treatment, although 34 had positive tests (2 white and 32 colored).

Most deaths due to infections other than syphilis and to gastrointestinal disturbances can be prevented by adequate pediatric care for the infants.

Although the results of this study must be accepted with caution, the conclusion seems warranted that neonatal mortality in the District of Columbia can be lowered.

This study was undertaken with the idea that the results would serve as the basis for a more intensive study of individual deaths as they occur. The value of such a study of current deaths is being clearly demonstrated in the analysis of maternal deaths now being made by the Maternal Welfare Committee of the Medical Society of the District of Columbia.

Since the causes of neonatal deaths are closely associated with the causes of stillbirths, discussion of specific methods that can be expected to lower neonatal mortality in the District of Columbia will be included in the discussion of prevention of stillbirths (The Problem of Stillbirths, by Ethel C. Dunham).

THE PROBLEM OF STILLBIRTHS*†

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This discussion of the problem of stillbirths is based on material collected in the course of a study of stillbirths recently made by the Children's Bureau in 229 hospitals in 25 States and the District of Columbia. In a period of 15 months these hospitals reported 6,750 stillbirths, of which 276 were reported by hospitals in the District of Columbia.‡ Before discussing the findings of the study a brief review of stillbirth mortality statistics will be made.

That stillbirths present a problem of considerable magnitude in the United States is shown by the fact that each year approximately 75,000 stillbirths are registered, although it is well known that registration is very incomplete. Moreover, the stillbirth rate has not decreased appreciably in recent years. Relatively little interest has been manifested in the size and seriousness of the problem as compared with that shown with regard to infant or maternal mortality. It is for this reason that the Children's Bureau is making a study of stillbirths at this time.

In the District of Columbia about 400 stillbirths are registered yearly. The stillbirth rate in the District of Columbia in 1936 was 37 per 1,000 live births; that for the United States was 34.

The trend of mortality from stillbirths in the District of Columbia from 1927 to 1936 for white and for colored infants is shown in Chart 1.* It can be seen that there is some evidence of reduction of the mortality rate, a reduction that is marked among colored infants, but slight among white infants. The morality rate among the colored was, however, greatly in excess of that among the white infants throughout the period. In 1936, the latest year for which census reports are available, the stillbirth rate was 27 among white infants and 58 among colored infants. It is obvious, therefore, that the high total stillbirth rate of 37 was strongly influenced by the high rate among colored infants.

It should be pointed out that the Bureau of the Census urges caution in interpreting stillbirth statistics compiled by them, because there is no single definition of "stillbirth" in general use and because the application of the term varies widely in the laws and practices of the different States.†

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* From the Divisions of Research in Child Development and of Statistical Research, Children's Bureau, United States Department of Labor.

† Read before the Society, April 13, 1938.

‡ Columbia (62), Garfield Memorial (40), Georgetown University (18), George Washington University (11), Freedmen's (62), and Gallinger Municipal (83).

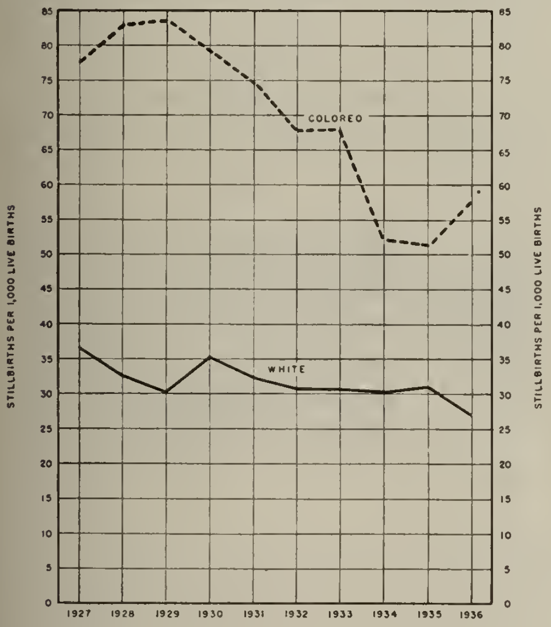
* Based on statistics issued by the U. S. Bureau of the Census.

† For a definition of stillbirth and rules of statistical practice recommended by the American Public Health Association, see Stillbirths (Report of the Subcommittee on Stillbirths of the Committee on Accuracy of Certified Causes of Death), American Public Health Association Year Book, 1935–36, pp. 244–249.

Because of this variation in definition the hospitals included in the Children's Bureau study were asked to report as stillbirths all products of conception of 20 weeks or more gestation which showed, after complete birth, no signs of life; that is, no breathing, no action of heart, no movement of voluntary muscle. The schedule used for the study covered the items on the standard birth certificate used for obtaining medical data and in addition items considered essential for an understanding of the causes of stillbirths. Space was provided, as in the standard certificate, for the physician to enter the primary cause of the stillbirth, and in addition directions on the schedule required that the maternal and fetal conditions associated with the stillbirth be entered separately.

CHART 1

TREND OF MORTALITY FROM STILLBIRTH AMONG WHITE AND COLORED INFANTS; DISTRICT OF COLUMBIA, 1927—36



The analysis of the data is not yet complete, but information has been obtained which is thought to be of considerable importance in the attempt to understand the causes of stillbirths.

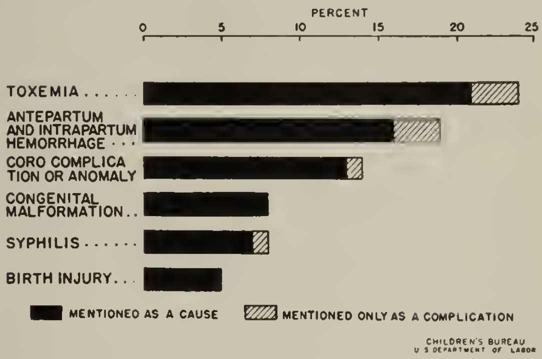
Among the 6,750 women for whom schedules were obtained about four fifths were white and one fifth colored. Approximately three fifths of the mothers were under 30 years of age and about two fifths were primiparae.

The stillbirths are being studied in relation to four factors: First, the time when the fetal death occurred in relation to labor; second, the period of gestation at which stillbirth occurred; third, the frequency of certain complications of pregnancy and labor and certain conditions in the stillborn infants; and fourth, the method of delivery, that is, whether spontaneous or operative. The complications of pregnancy and labor were studied in relation to whether the physician recorded the conditions as the cause of the stillbirth or recorded them merely as complications.

When considering the time of fetal death in relation to the onset of labor, that is, whether the death occurred before or during labor, it was found that more than half (58 per cent) of the total number of fetal deaths studied were reported to have occurred before the onset of labor, and that the proportion of stillbirths occurring before labor began was somewhat higher among colored than among white infants. It was further learned that the proportion of deaths occurring before labor began was greater when the death of the fetus occurred in the earlier periods of gestation, that is, before the thirty-fifth week, than when it occurred during the thirty-sixth week or later. As will be pointed out, this relationship between the time of fetal death and the onset of labor is of considerable significance in studying the causes of stillbirths.

CHART 2

FREQUENCY OF CERTAIN CONDITIONS ASSOCIATED WITH STILLBIRTH



Complications of pregnancy are usually reported among the commonest causes of stillbirth, but the exact incidence of such complications as toxemia and antepartum and intrapartum hemorrhage has not been determined. In this study it was found that the condition entered on the schedule as a complication was usually entered also as a cause of the stillbirth. Among the conditions studied, toxemia was reported to be the complication most frequently associated with stillbirth (24 per cent); hemorrhage was the second (19 per cent); umbilical-cord complications were third (14 per cent). Congenital malformations, syphilis, and birth injury were associated with stillbirths less frequently, in 8, 8, and 5 per cent of the cases, respectively (Chart 2).

It should be pointed out, however, that the rôles played by syphilis and birth injury in causing stillbirths are probably greater than the results of the study indicate. The incidence of syphilis is open to question, because Wassermann tests were made of the blood of only two thirds of the mothers (68 per cent), and in more than one third (36 per cent) of the cases in which a test was made it was not made until the day of delivery or later. More than one half of the total number of women were therefore either not tested or were tested too late to be treated if they were syphilitic. Among white women, 4 per cent of the tests were positive; among colored women, 28 per cent.

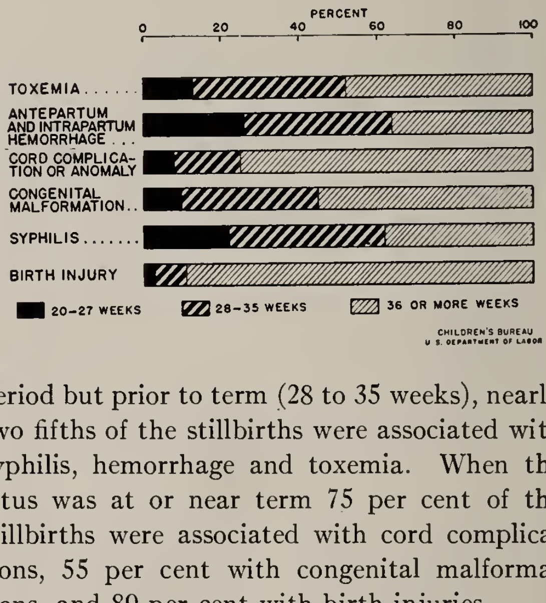
The incidence of birth injury is also open to question, because autopsies were performed on only one third of the total number of stillborn infants and it is well-known that the diagnosis of birth injury may often be made on postmortem examination when it is not diagnosed clinically.

Among the 276 stillbirths reported from the District of Columbia* the complications of pregnancy were reported to be associated with stillbirth in the same order of frequency and in about the same proportion as in the total number of 6,750 stillbirths. Serologic tests for syphilis were, however, known to have been made in an even smaller proportion of cases than in the total study (only about half compared with two thirds for the total study). Among the District cases only one fourth of the white women were reported to have received tests, of which only 1 test was positive; three fourths of the colored women were reported to have received tests, of which 38 were positive (32 per cent).

In Chart 3 is shown for each condition associated with the 6,750 stillbirths the period of gestation at the time the delivery took place. During the pre-viable period (20 to 27 weeks) 26 per cent of the stillbirths were associated with hemorrhage, 22 per cent with syphilis, and 13 per cent with toxemia. After the pre-viable period but prior to term (28 to 35 weeks), nearly two fifths of the stillbirths were associated with syphilis, hemorrhage and toxemia. When the fetus was at or near term 75 per cent of the stillbirths were associated with cord complications, 55 per cent with congenital malformations, and 89 per cent with birth injuries.

CHART 3

PERIOD OF GESTATION
BY CONDITION ASSOCIATED WITH STILLBIRTH



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Complications of labor are also frequently reported to be the cause of stillbirth. In census reports labor complications were reported in 1935 as first in importance as a cause of stillbirths (14 per cent). In this study the exact rôle played by labor complications has not yet been determined. Forty-two per cent of the stillbirths, however, were reported to have occurred during labor. In this connection it should be pointed out that in more than one third of all the cases in which the fetus was alive at the onset of labor but died before delivery, labor was prolonged for more than 24 hours.

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* This is about one half of the total number of stillbirths that occurred in the District of Columbia during the period of the study.

The rôle played by operative delivery in causing stillbirths has been somewhat clarified in this study, because the time of fetal death in relation to the operation has been recorded on the schedules. It was found that although 40 per cent of the deliveries were operative the operation could not be held responsible for the stillbirth in a great majority (72 per cent) of the cases, because in this proportion the death of the fetus was reported to have occurred before the operation was undertaken. Plass and Alvis[1] in 1934 reported a study based on certificates of more than 129,000 births occurring in Iowa. These authors reported that the stillbirth rate was four times as high in operative as in spontaneous deliveries. The exact rôle that operative delivery played in causing these stillbirths is not clear, however, since the modified Iowa birth certificate used for the study did not contain information in regard to the time of fetal death in relation to the operative delivery.

Among the 276 cases reported by the District of Columbia the same proportion of women (40 per cent) were delivered by operative procedures as in the total study, and the same proportion of infants died during operation.

The rôle played by other complications of pregnancy and labor and by different types of operative deliveries in causing stillbirths has not been determined.

When the analysis of all the data has been completed it is hoped that the results will be valuable in the preparation of a classification of causes of stillbirths and of rules for the assignment of cause. The need for this basic work is obvious, since there is frequently more than one condition which might be the cause of a stillbirth, and the International List of Causes of Death and the Manual of Joint Causes of Death are not applicable to stillbirths. It is for this reason that there is little agreement in reports of the relative frequency of different conditions in causing stillbirth.

The subject for greatest concern is how stillbirths may be prevented. In general, it may be said that by the earlier detection and treatment of associated complications, particularly syphilis and the toxemias of pregnancy, more adequate prenatal care would tend to reduce the number of fetal deaths occurring before the onset of labor and the number of neonatal deaths, particularly those of premature infants. Earlier diagnosis of pelvic abnormalities and disproportion would reduce the incidence of certain labor complications leading to birth injuries. Improved standards of technic for the care of women during pregnancy and delivery and of newborn infants would reduce the number of infections, and this in turn would reduce the number of neonatal deaths.

In the course of several recent studies made in the District of Columbia the approach to these problems has been more direct, and therefore more specific recommendations can be made as to methods of reducing the incidence of stillbirths and neonatal deaths in the District of Columbia, as follows:

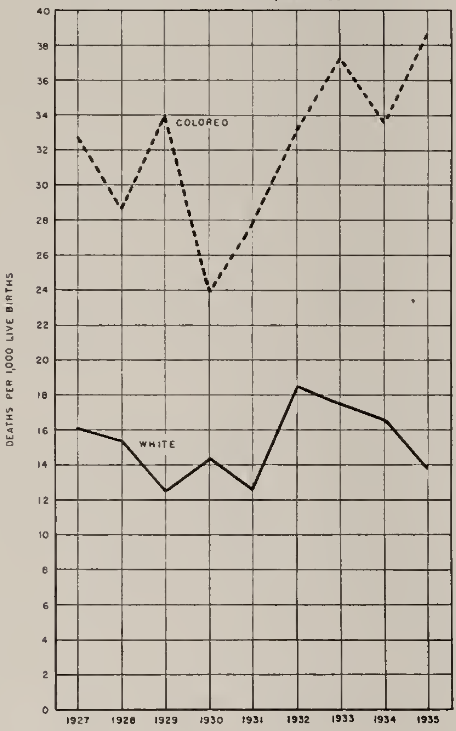
1. Since it is especially among Negroes that the stillbirth and neonatal mortality rates are high, steps should be taken to provide increased clinic and hospital facilities for the care of Negro maternity patients and to improve existing facilities for mothers and infants, both white and Negro.

2. Since neonatal mortality rates are greatly influenced by premature births, adequate provision for the care of premature infants should be made in every hospital. Responsibility for the examination and care of premature infants, as well as of all newborn infants, should be the direct concern of the pediatric staffs of the hospitals, and pediatric consultation service should be provided for infants born at home.

One or more hospitals might well be designated as centers for the care of premature infants, and provision should then be made for a medical and nursing staff specially trained in the care of such infants and for rooms specially equipped for their care. Proper provision should also be made for the transportation to these centers of premature infants born at home or in hospitals not properly equipped for their care. The importance of taking steps to reduce mortality from premature birth is shown by the trend of mortality from premature birth under 1 month in the District of Columbia from 1927 to 1935 (Chart 4*). It can be seen that there is no evidence of decline in the mortality from this cause among either white or colored infants in this period.

CHART 4

TREND OF MORTALITY FROM PREMATURE BIRTH IN THE FIRST MONTH OF LIFE AMONG WHITE AND COLORED INFANTS; DISTRICT OF COLUMBIA, 1927–35



3. Since infection is one of the chief causes of neonatal deaths, attention should be directed to the development in hospitals accepting maternity cases of adequate isolation facilities and of individualized technic in the care of the mother and newborn infant.

4. Since complications of pregnancy and labor are closely related to both fetal and neonatal mortality, complete coördination of prenatal services in hospitals and clinics should be developed so that there will be greater continuity of care for the individual patient.

5. Increased public-health-nursing services should be provided, particularly for home-delivery services.

6. Increased efforts should be made to obtain registration of women at an early period of pregnancy.

7. Adequate medical-social services for all agencies dealing with problems of maternity should be provided in view of the well-known association between socio-economic factors and fetal and neonatal mortality.

8. Hospitals admitting maternity patients should study their individual needs by analyzing records of morbidity and mortality among mothers and infants and by comparing their facilities and procedures with generally recommended standards. Concerted efforts should be made to provide and maintain adequate facilities and to institute procedures that are in accordance with the best modern practice.

9. A current study of stillbirths and neonatal deaths should be made. This study might well follow the method of approach of the study of maternal deaths now in progress under the direction of the Maternal Welfare Committee of the Medical Society of the District of Columbia.

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* Based on statistics issued by the United States Bureau of the Census.

Economy in Medication. In the present intensive study of medical economics, economy in medication must not be overlooked. This is especially important in hospitals. In such large institutions as the Cook County Hospital, the saving resulting from coöperation between prescribing physician and dispensing pharmacist might easily run into such a huge sum that I hesitate to name it. Even in private practice it pays to economize in medication. Some physicians are nothing less than spendthrifts and wasters when it comes to prescribing. The difficulty a doctor finds in collecting bills may sometimes be due to the fact that the patient's family, after paying for expensive medicines, may have nothing left with which to pay the doctor.

Of course by economy in medication is not meant the use of inferior remedies, for the first principle of economy in prescribing is that the most efficient remedy is likely to be the cheapest. The second principle in the economy of medication should be: Among drugs of equal efficiency, choose the least expensive. What this might mean in the case of hypnotics and analgesics is illustrated . . . .

It will be seen that two of the three most efficient hypnotics, namely chloral hydrate and barbital, are also the cheapest.

Economy in Hypnotics. Research such as that carried out by Grabfield, the results of which are given . . . , needs to be multiplied a hundred times. If its lessons were to be promptly incorporated in practice it would pay for itself many times over. At present, hardly anybody seems to know—and nobody seems to care—how much it is necessary to pay in dollars and cents to secure a certain therapeutic effect.

The chemical manufacturing industry is geared to mass production of new drugs, high speed "clinical testing" and high pressure salesmanship and distribution. Ever new variations of chemical compounds are thrown on the market until this has become a veritable jungle, almost impenetrable to the rays of the light of reason. Even the Council on Pharmacy and Chemistry does not pass on the cost of drugs. Information is lacking on the important practical question of whether these newer therapeutic agents are worth the price. What is needed is evaluation of the newer as compared with the older remedies and with one another. Surely a part of this evaluation should be the question of price. . . .

Extract from article by Bernard Fantus, M.D., Chicago, *Journal, American Medical Association*, March 19, 1938, p. 880.

MENTAL DISORDER AS SEEN IN GENERAL PRACTICE*

John E. Lind, M.D.
Washington

In this age of specialism it has come to be generally held that each specialist believes that the events happening in his own particular field are about the most important in medicine. It is true that constant preoccupation with one branch of medicine, year in and year out, has an inevitable tendency to limit the field of consciousness to a somewhat narrow focus and make one somewhat lose perspective.

Nevertheless, I cannot refrain from calling your attention to a few figures with which all of you are not perhaps familiar. From the year 1880 to the year 1920 the general population increased, in round numbers, 110 per cent, while the population of the mentally ill in our public institutions increased 468 per cent. In an investigation made of deaths in New York State for a single year it was found that 1 out of every 22 occurred in mental hospitals. Careful studies made by several different investigators have shown that out of every 22 persons born 1 of them may be expected some time during his lifetime to become an inmate of a mental institution.

Another way of realizing the magnitude of the mental problem is by stating that one half of all the hospital beds in the United States are for mental patients. In the year 1933, for example, the total hospital days in the United States were 296,000,000, of which 173,000,000 were spent by mental patients and 123,000,000 by all other kinds of patients.

It may be granted, then, that mental disease is a gigantic social and economic problem. But, up until a comparatively few years ago, within my own time in fact, the general attitude of the public, lay and medical alike, was that it was too bad, but what could be done about it? A large number of young persons every year developed that strange and usually irrecoverable disease, dementia praecox, a certain number of persons who had once contracted syphilis became paretics and went on to a speedy and inevitable death, some children turned out feeble-minded and became a total loss, and so on.

The picture is entirely different now. Mental hygiene is abroad in the land. There is such a thing as prophylaxis of mental disease, psychotherapy, and even the cure of formerly hopeless cases. I need hardly mention the malarial treatment of general paresis, which is only 17 years old in this country, except that whenever I think of it my mind goes back to my early days in psychiatry when the diagnosis of general paresis was a death sentence. The patient was hurried off to an asylum, where after a downward course of a few years he died a distressing death. Now thousands of paretics have been returned to their work and families. Even in dementia praecox, constituting roughly one half of all mental cases, and formerly presenting the outlook of a lifetime in an institution, we have the new so-called "shock" treatments, which appear to offer a ray of hope.

These are the two most spectacular advances in recent years, but there are many others working in other fields. I might mention the ketogenic diet and the fluid limitation treatment for epilepsy, the various forms of endocrine therapy, the social training of the feeble-minded, etc. In other words, there are therapeutic efforts, some successful, some highly promising, some as yet only tentative being made in all fields toward the amelioration of mental disorders.

What I wish to dwell upon, however, is that in all these forms of therapy, early treatment is excessively important. In general paresis, for example, it has been our experience that the percentage of good results in the first year of the disease was 59 per cent, the next two years 19 per cent, and after the third year only 9 per cent.

In the insulin and metrazol treatments of dementia praecox, so far at least, the better results have been obtained in the first year, the best in the first 6 months of the illness. And the same holds true, more or less, of other disorders.

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* Read at the Annual Scientific Assembly of the Society, May 4, 1938.

Early diagnosis of mental disease then has assumed a new importance, in addition to its constant value in those cases which might become anti-social if not recognized and committed.

All this, of course, puts the burden squarely on the general practitioner, as a rule. For it is nearly always he who sees the early symptoms of mental disorder, and by recognizing them and instituting appropriate treatment he will be performing an invaluable service to the patient and to the community.

The intent of this brief paper is then to emphasize this point and to call attention to a few of the early manifestations of mental disorder as seen in the outside world.

It is often given to the practicing physician to observe an individual in all the phases of his development, as an infant, an adolescent, as a young adult, and so on. Many personality traits, habits of behavior, neuroticisms and the like come to his attention which represent warning signals or indicate the necessity of certain prophylactic measures. Some of these latter may of course merely consist of character training, instruction in mental hygiene, etc., and do not necessarily imply the existence of real mental disorder or need for commitment.

In the young child the physician will frequently see such things as enuresis, prolonged finger-sucking, temper tantrums, night or day terrors, sexual precocity, tendency to an undue phantasy life and withdrawal from reality, and various other symptoms as important and demanding of attention as the physical disorders of that time of life.

Delayed walking, talking or teething, slowness in learning simple adjustments, undue attachment to one parent, or fear of another, and so on may require the services of a child psychologist or an endocrinologist, and then serious trouble later on, perhaps praecox, may be averted.

The early symptoms of dementia praecox often parade themselves before the eyes of the family for a long time before it is suspected that mental disorder actually exists, but this should not be the case with the physician. Remembering always that the period of adolescence is a stressful one, with its extensive physiologic changes, the social demands to which the individual is subjected, the adaptations he must make to his fellows, school, work, the other sex, and so on, the physician is on the alert for, and suspicious of the following symptoms:

The boy shows a change in personality, he becomes seclusive, spends long periods in his room, is moody, dislikes eating with his family, occasionally makes strange or irrelevant remarks, is seen smiling to himself, etc.

All these things may have been observed by the family who attribute it to the "awkward period" of life and think he will outgrow them. They should be significant to the physician, however, and call for an examination by a psychologist or psychiatrist.

Similarly, the first manifestation of a later manic-depressive psychosis are sometimes seen in this period. It so happens that I have seen several such cases in recent years with almost parallel histories. In each case a young girl of 17 or 18 began to have difficulty with her lessons, became very quiet and finally gave up school for several months with what was called a "nervous breakdown." During this time she sat listlessly about, interested in nothing, and in a mood of mild melancholy. Later her spirits returned and she went back to school. Some years afterwards, however, attacks of unmistakable manic episodes began. In each case the first attack had apparently begun with a conflict or disappointment, one girl had wanted to go into a religious order and her parents had refused, another had had an unfortunate love affair, and so on.

These episodes, then, occurring in the adolescent should be regarded with suspicion. It is not usually well to delve too deeply into the patient's emotional life during the depression itself, but after recovery psychotherapy often helps the patient, at least to understand her difficulties and perhaps to direct her future life with a minimal risk of recurrence.

In dealing with patients in middle life probably the most important necessity along our line is the early recognition of general paresis and the institution of treatment. We should be especially suspicious of our patients in the so-called "paretic age," that is, 30 to 50, particularly if we know of an existing luetic infection, remembering that at least 2 per cent of all syphilitics develop paresis if they live long enough. If we have, then, a male patient whom we know to have had syphilis, even though the disease has apparently long been cured, we take the opportunity from time to time to examine his blood and on one pretext or another, when he visits our office, we do a few neurologic tests.

Fortunately the early physical signs of the disease are rather easily elicited by even a superficial examination in most cases and do not necessarily require an expert neurologist. They are, of course, the speech defect, the Argyll-Robertson pupil, the disturbance of the knee-jerk, and the tremor of the tongue. All these can be tested for in a very few minutes, and any positive finding should demand further investigation.

Likewise, a change of personality in our middle-aged patient arouses our suspicion. Unusual moral lapses, irresponsible behavior, departure from former standards of decorum, etc. We must also remember that a certain percentage of early paretics show what is commonly called the neurasthenic syndrome and go about from doctor to doctor, complaining of being tired, having headaches, vague pains here and there, and so on.

In all these cases, then, we have in mind at least the possibility of an early paretic; and remember we have at our command now serologic resources not available only a few years ago. In fact, from time to time now we pick up patients who might be called potential paretics, that is, a (perhaps) chance examination of the blood has shown a positive result, the spinal fluid is then taken and shows a typical paretic picture. In some such cases there are only a very few, not easily discernible neurologic signs, and we are uncertain as to any change of personality, etc. In other words, we have caught the disease in its incipiency, before it has had a chance to injure the organism seriously. Such cases are, naturally, the most favorable for treatment.

The general practitioner will occasionally come into contact with a paranoid condition presenting dangerous potentialities. Paranoid attitudes and habits of projection he will of course meet with in many patients where they are a part of the personality make-up, and while they affect the individual's general life-efficiency do not necessarily require any special measures except an extra diplomacy in dealing with the patient. Now and then, however, we may run across a patient from whom we learn, perhaps more or less by accident, that he has formed a paranoid system of ideas, associated with a great deal of emotion. Or perhaps he has ideas that he is being poisoned, and he brings the physician samples of his food, or of his excreta, for analysis. Or he may wish a complete physical check-up, believing that his health has been affected in various ways by the machinations of his enemies.

Such cases are fraught with danger. The physician should persuade such a patient to see a psychiatrist, or take whatever other steps may be necessary to secure treatment.

A word as to treatment of the depressions, those particularly of the manic-depressive variety and involutional melancholia. The general practitioner's problem is often a delicate one in such a case. The family frequently prefer to keep the patient in the home, because such a patient is apparently rather easily cared for. They should be impressed, however, with the ever-present danger of suicide, which I have found most families are inclined to treat too lightly. They say, "Oh, I know so-and-so would never take her own life."

There is, of course, this danger in all depressed cases, but especially in those cases of involutional melancholia in which the illness has been precipitated by a real event, the loss of a fortune or of a loved one. A dangerous period, moreover, is that of convalescence. The depressed patient is getting rapidly better and then there comes a day when he seems as bad as ever. Unless he has been warned to expect such a temporary set-back he may feel that the affair is hopeless and end it all. We have found in connection with suicide that sometimes the dreams of the patient give us some clue. It seems to be a bad sign when she dreams of death, of being killed, or of killing someone. In many cases we have checked up and found that the subsidence of such dreams coincided with the waning of suicidal ideas.

We have now gotten our imaginary patients through most of their lifetimes, and we come to the senile and arteriosclerotic period. The dangers here are that the elderly man will fail more rapidly than his family or friends realize and do some irrevocable thing. From time to time I have been called to see a respectable citizen in his sixties or seventies accused of some sexual offense, such as exposure, or molesting a little girl, and have found him definitely senile or arteriosclerotic with marked memory and intelligence defects, and occasional periods of confusion. Or such a person may deed away valuable property, or make a will contrary to the moral equities.

The physician then with such a patient takes occasion from time to time to check up on the accuracy of his memory, the soundness of his judgment, his daily habits, etc., and with the appearance of beginning senility warns the family that supervision must be exercised. I have been consulted in so many cases of contested wills, too, made by elderly persons, that I do not believe if I were in general practice I would participate in the drawing up of a will of any person at all without a mental examination.

I have necessarily been very brief and perhaps not very informative in this paper on account of limitation of time, but if I have impressed you with the desirability of being on the lookout for mental symptoms and taking appropriate action, it is enough.

In conclusion, I must state that nowadays, due probably to many factors, the mental hygiene movement, public health education, the generally more intensive medical education, and especially the increased attention given to psychiatry in the medical curriculum, early diagnosis is becoming more and more common; and with the new interest in therapy for the mentally ill, we can feel that the whole problem is not now the apparently insoluble one it was a generation ago.

The Use of Nicotinic Acid in the Treatment of Pellagra. It is now commonly believed that pellagra in human beings and blacktongue in dogs are either analogous or closely related diseases. All food substances which have been curative and preventive for one have been for the other also. The observations of Elvehjem, Madden, Strong and Wooley regarding the cure of canine blacktongue by the use of nicotinic acid suggested that this substance might be useful in the treatment of human pellagra. Since we could find no reports on the effect of nicotinic acid on human beings, a preliminary study was made to determine a safe range of dosage. Thirteen persons, three members of the staff and ten nonpellagrous patients, were given an aqueous solution of nicotinic acid (Eastman) orally each day. The dose varied in amount and was usually begun at a few milligrams daily and in some instances was increased until 200 mg. was being given daily. Nine persons had a reaction characterized by severe flushing, itching and tingling, particularly of the face and extremities, which occurred within twenty minutes after the administration of the nicotinic acid. At the peak of the flushing there was no demonstrable effect on the blood pressure, temperature or respiration. In no instance did the oral administration of less than 50 mg. produce any effect, and usually the reaction occurred only when large amounts were given. The symptoms in all persons subsided rapidly, leaving no residual changes. . . .

Material and Methods: Subjects. With the foregoing observations in mind and using a method previously adopted for studies on liver extract, yeast and wheat germ, we selected eleven pellagrins for study. The group was composed of two persons with endemic pellagra, three pellagrins whose disease followed chronic addiction to alcohol and six whose pellagra was secondary to organic disease. The selection of these eleven persons depended on the presence of glossitis or stomatitis or both. Other manifestations of pellagra were also present in the majority of cases. . . .

Summary and Conclusions. 1. The lesions of the mucous membrane in eleven cases of pellagra (two of endemic pellagra, three of alcoholic pellagra and six of pellagra secondary to organic disease) were cured promptly by means of nicotinic acid. In five cases dermal lesions were absent (pellagra sine pellagra). Nicotinic acid had no apparent effect in four cases of nonpellagrous glossitis.

2. The pellagrous glossitis, stomatitis, ptyalism, vaginitis, urethritis and proctitis did not reappear while the patients received nicotinic acid, despite the fact that four of the patients continued to eat only small amounts of a pellagra-producing diet. After the disappearance of the pellagrous glossitis and stomatitis in case 6, the patient remained on the same diet, but the administration of nicotinic acid was discontinued, with the result that the conditions recurred.

3. Severe cases of pellagrous dermatitis, that is, those in which the continuity of the skin had become broken and the lesions were moist, ulcerated and thickened, did not seem to be specifically benefited by nicotinic acid. However, the acute fiery red, erythematous lesions in which the epithelium was intact blanched within twenty-four to forty-eight hours after the administration of nicotinic acid.

4. The manifestations of peripheral neuritis became worse in case 9 when small amounts of the basic diet and supplements of nicotinic acid were taken. The symptoms of peripheral neuritis have previously been observed to progress simultaneously with healing of the mucous membrane and the dermal lesions.

5. This study gives little information as to whether nicotinic acid is effective in the treatment of the severe mental symptoms of pellagra. It has been observed previously that such mental symptoms often disappear after persistent antipellagra therapy over a long period. The patients in this study who had mental symptoms were too severely diseased to warrant their remaining on an unbalanced diet for a sufficient period for us to determine this point with any degree of finality. . . .

7. The maximal and minimal dosage of nicotinic acid for oral use has not been determined, but it appears from this study that 0.5 Gm. daily, given in five doses of 100 mg. each, is safe and effective in the usual case of pellagra. It is likely that a smaller dose will be found to be effective. Likewise, the maximal and minimal dosages of nicotinic acid for parenteral injection have not been determined. It was found that from 50 to 80 mg. a day, in sterile physiologic solution of sodium chloride, was effective when injected intravenously. On several occasions hypodermoclysis of 100 mg. of nicotinic acid in 1 liter of sterile physiologic solution of sodium chloride, injected slowly, was effective also. . . .

Extract from article by Tom D. Spies, M.D., Clark Cooper, M.D., and M. A. Blankenhorn, M.D., Cincinnati, *Journal, American Medical Association*, February 26, 1938, p. 622.

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WHAT! ANOTHER SURVEY?

Intermittently we hear protests against questionnaires with which physicians have been deluged. What in the name of common sense are they worth anyway? Questionnaires, they say, are phrased in such a way that either only one answer is possible or one can only hazard a guess. Why not let those in authority decide the matter and let it go at that?

It has seemed to us that physicians who protest in this manner are not so much opposed to questionnaires as it would appear. They are, we believe, registering objections to the complexities of an existence in which each additional task becomes a burden, and we sympathize with them. Proceed to take from them the opportunity of registering their opinion, however, whether it be by the questionnaire method or by vote in a general meeting, and a storm of righteous indignation will break loose. Rightly they will rise up and challenge autocratic methods which would deprive them of the privilege to which they are entitled.

We heartily agree that facts obtained by the questionnaire method may in some instances be valueless and that as it is sometimes charged, questions are so devised that they will reveal only what their sponsors intend they should. Whether or not this is true, of course, depends to a considerable extent upon the source and purpose of the investigation.

By and large we believe most surveys are made in an honest attempt to obtain reliable information and a comprehensive understanding of opinions held by the groups among which they are being conducted. Of necessity, the larger the group the more frequently the questionnaire method is used. In an organization such as ours any method other than the questionnaire is not feasible. The average attendance at meetings runs somewhat over 100. However, our active membership totals more than 850. Views of one eighth of the members in matters of policy is hardly a fair basis on which to arrive at a decision. All of our members should have the opportunity of registering their opinion. Unfortunately even when the opportunity is offered many do not take advantage of it.

At the present time the Society is conducting an investigation of the need and supply of medical care in the District of Columbia. At the time this is written about one quarter of the active membership have returned the questionnaires sent them, although two weeks have passed since the forms on which to record information were forwarded. Every effort is now being put forth to obtain the views of at least 75 per cent of our members. A follow-up is being made on each member who has failed to fill out and return the questionnaires sent him. When returns have been received from at least a majority, the Society's officers will have reason to feel that they are on firm ground in making recommendations.

There is nothing wrong with surveys based on the questionnaire method if properly conducted. It is the only satisfactory method of obtaining views of large groups. Questionnaires are somewhat of a nuisance, we agree, but not to the extent that some "victims" would have us believe.

Well, that's enough about questionnaires and surveys. Better get your questionnaires in the mail now. If you don't, "we'll be seeing you."

WRITING MEDICAL PAPERS

Many able physicians with experiences worth publishing are unable to write acceptable papers because they lack sufficient training to prepare them. As with everything else education and experience are necessary to put ideas and facts into words that are suitable for reading. Those who aspire to be medical authors or to improve themselves in the field of medical writing would do well to secure a copy of Medical Writing: The Technic and Art, by Morris Fishbein, Editor of the Journal of the American Medical Association, from the Press of the American Medical Association, just published. The editors of the Annals can highly recommend this small volume, replete with sound advice and facts.

It seems to be the general impression that simply because a member of the Society reads a paper at some meeting of the Society his paper will be published in the Annals. This is not the case, no matter how much the editors would like to please the author. To be acceptable a paper must not only be properly prepared, but it must be concise, contain new facts or a worthy review of previously known facts, not too technical, of general interest, and on a subject that has not been discussed too frequently to be trite. The bibliographical references must be complete and accurate and must have been specifically quoted in the paper.

Not more than three illustrations are allowed for any one paper, more sometimes being used but at the author's expense. The ordering of reprints is encouraged, and these may be obtained at small charge from the publisher. Application forms for reprints are automatically sent to every author before the article is published.

Often in an accepted paper editorial corrections are made before the galley proof is submitted to the author. These changes are made solely with the desire to maintain the editorial standards established and if necessary to improve the presentation of material, both of which should be to the advantage of the author. When the editors unwittingly alter the meaning of a statement or when the author has a better solution of a literary problem, the editors are quite amenable to suggestion.

The time to write a medical paper is months in advance of its reading and publication. Osler, a prolific writer of valuable medical and other papers, rewrote most of his papers, sometimes several times, before he was satisfied. After the first writing it pays to lay the paper aside and perhaps a month later to read it again, at which time weak spots are more readily detected. It also pays to have someone not familiar with the subject matter read the paper, since often he can point out unclear passages of which the author, being perfectly familiar with the facts, failed to appreciate the abstruseness.

Those members of the Society who wish to have papers published during the coming fall and winter should get busy now and not wait until nearly time for the reading of the paper. Often a number of months elapse before a paper appears in the Annals, mainly because of the accumulation of previously accepted papers. However, the Annals is a good medium for the early publication of papers containing new facts for which priority in medical literature is desired. Preliminary reports may be published in the Annals and afterwards published in full in national journals. All articles appearing in the Annals are listed in the Quarterly Cumulative Index Medicus. The Annals also is widely read throughout the United States.

The editors are glad to get news items of interest to physicians, and most of these will be gladly published if space permits.

"M.D."

Apparently there is nothing easier to acquire than the title of "Doctor." Of course, there are some legal restrictions on its use when it comes to treating the sick, but generally speaking it is as readily obtainable as a Kentucky Colonelship. Unfortunately, the public usually is not able to distinguish between "Doctors" and doctors. To many, all who use the prefix "Doctor" are qualified to treat the sick.

There are, of course, a variety of ways in which one can become a doctor. Many degrees conferred by the universities permit their possessors to use the title. One can become a doctor of dentistry, law, philosophy, theology and so on. Those so privileged rarely mislead the public into the belief that they are physicians. The same cannot be said of the "graduates" of institutions representing cults.

Among those licensed to treat the sick in the various states are adherents of numerous cults such as chiropractic, naturopathic, and the like. In some instances they are legally entitled to use the "Doctor" title. Naturally, this is most confusing to the public. How can we determine when doctors are doctors of medicine, they ask? It appears to us that it is up to the medical profession to answer this question through an educational program. The present situation endangers public health and it is the duty of the profession to see to it that the facts are generally known.

How shall we go about it? First of all it should be made known, through the various channels open to the profession, that only doctors of medicine are graduated from medical schools in this country and they alone are entitled to use the title "M.D." That is an important point to stress and physicians do not emphasize it enough. Too frequently one sees on the physician's sign, "Dr. So-and-So," with the "M.D." omitted. Few physicians apparently stop to realize that a great number of the cultists in his community are entitled to put up the same kind of a "shingle." If it were emphasized that the "M.D." title can be used by no other group of practitioners than doctors of medicine, such misunderstanding could be eliminated.

Here are some suggestions relative to the use of "M.D.":

Always use it following your name on your stationery, on your office windows and on the sign outside your door. In preparing articles for lay publications always include your "M.D." title. Explain to all who inquire what it implies.

Our Society can do its part along the educational line through its Speakers' Bureau and in its other relationships with the public. In conversation and sometimes in writing it is unavoidable to use the prefix "Doctor"; however, its use should be reduced to a minimum. If consistent effort is made to enlighten people in this regard, many tragedies of mistaken identity will be avoided.

GENERAL RECOMMENDATIONS GOVERNING MEMBERS OF THE MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA REGARDING PUBLICITY*

The Medical Society of the District of Columbia is keenly conscious of the fact that it has an obligation to discharge in respect to providing the public with authentic health and medical information. Its Committee on Public Information has therefore been assigned the task of supplying the public with authentic medical news, and furthering the Society's health educational program.

For the guidance of Society members the following recommendations governing publicity have been adopted:

1. The Committee on Public Information is the agency through which the Society and its members should approach the public on all matters relating to medicine.

2. Members desirous of giving information to the press on a health or medical subject should notify the Executive Secretary in order that the Committee on Public Information may arrange and supervise its proper release.

3. Members invited by individuals or organizations to make a public address, a radio appearance or to write articles on a health or medical subject for lay consumption, should also notify the Executive Secretary so that they may have the benefit of the Committee's suggestions. Society members are advised against broadcasting articles over the radio, or releasing them to lay publications, without the approval of the Committee. Adherence to this procedure will afford protection to both the public and the medical profession.

4. Any officer or chairman or member of a committee of the Medical Society of the District of Columbia who writes an article for the lay press, or delivers a speech over the radio, or in public, on a health or medical subject, should use only the title of his office in the Society and none of his personal titles.

5. To guide physicians who desire to write articles for lay consumption or to speak in

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* Approved by the Committee on Public Information, and the Executive Committee on August 3, 1938.

public, the following definitions are submitted:

(a) Proper medical publicity is the issuance of a public statement concerning an event of general interest and importance. It stresses the happening rather than the individual.

(b) Undesirable medical publicity is the publication of material relating to individual activities designed to magnify the importance of that individual in the eyes of the public.

(c) Public health education is the impartial instruction of the public in facts related to the nature, prevention, and treatment of disease. It stresses the facts rather than the individual presenting them.

REPORT ON SESSIONS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION AT SAN FRANCISCO

In the Journal of the American Medical Association for July 2, 1938, pages 31 to 64 (Volume 111, No. 1) the proceedings of the House of Delegates appear. These minutes, of course, constitute the best report the delegates could make to their own state organizations, and the members of the Medical Society of the District of Columbia are urged to read them in their entirety.

Attention is particularly directed to the address by Dr. N. B. Van Etten, the Speaker, on page 31. This is a complete answer to the complaint that the American Medical Association does not itself assume the leadership and prescribe the cure for local difficulties that beset the medical profession. The answer is that the democratic organization of the Association places the power of initiative at the periphery and not at the center.

The lesson to be learned is that preparation should be made in each state society for the coming meetings of the House of Delegates; that resolutions and memorials should be carefully drafted in advance, and that the delegates should be sent to the meetings amply instructed and empowered to present and to defend the policies of their respective jurisdictions. Only thus can national policies be formulated. Nor can national policies be brought to the stage of enactment over night. This is illustrated by two items of business transacted in San Francisco. Eight or nine years ago your delegate introduced a resolution prepared by our Committee on Traffic Regulations, of which the late Dr. Edward G. Seibert was Chairman, requesting that the American Medical Association set up standards of physical fitness, particularly visual standards, as a basis for granting permits to operate motor vehicles. In the proceedings of the House (page 58, loc. cit.) there will be found a report from the Section on Ophthalmology by which the American Medical Association promulgated visual standards for automobile operators.

Four years ago your Committee on Medical Economics enunciated the principle that the laboratory specialties of anesthesia, pathology and radiology constituted the practice of medicine in hospitals, and were not services to be included in the hospital bill. This principle was incorporated in the contracts offered by our local Group Hospitalization, Inc. Your delegate has contended for the principle in his American Medical Association contacts whenever possible, and at this session several enactments brought the principle much nearer to complete acceptance as a national policy (See Report of Council on Medical Education and Hospitals, page 45, loc. cit.).

Acting under instructions of our Executive Committee, received after reaching San Francisco, your delegate introduced and succeeded in securing the adoption of a resolution endorsing the creation of the Rockefeller Cancer Control Fund, of which Dr. Edith SeVille Coale has been named Trustee (Page 41; and Report of Reference Committee on Miscellaneous Business, page 47, loc. cit.).

Your delegate was appointed a member of the Reference Committee on Legislation and Public Relations. Attendance at the meetings of the House; at hearings by and conferences of his own Committee; and appearances at meetings of other committees in the interest of particular subjects, occupied his entire time during the sessions.

Attention is called to the Report of the Reference Committee on Legislation and Public Relations (pages 58–59, loc. cit.), with particular reference to paragraphs pertaining to medical service plans. These paragraphs will be of interest to our Committee on Medical Economics.

It will be noted that recognition and commendation of the efforts of this Society to prevent legislation prohibiting animal experimentation was made a part of the report.

One feature of the San Francisco meeting was the introduction of several resolutions which recognized the frequent misunderstandings and occasional antagonisms between the medical profession and the lay public and press. These proposals had the common purpose of making changes in the existing public relations agencies. The resolutions were considered by the Reference Committee on Amendments to the Constitution and By-laws and the Reference Committee on Legislation and Public Relations sitting jointly, and their report will be found on page 60 loc. cit. This report was unanimously adopted by the House.

The election of Dr. Harrison H. Shoulders, of Tennessee, as Speaker, to succeed Dr. Van Etten, who voluntarily relinquished the office; and of Dr. Roy W. Fouts, of Nebraska, as Vice Speaker, to succeed Dr. Shoulders, was of particular satisfaction to your delegate, as both officers have been fellow members of the House throughout his incumbency and the relations thus formed will prove of value in increasing your delegate's efficiency in the House.

H. C. Macatee
Delegate

RESOLUTION ADOPTED BY THE AMERICAN MEDICAL ASSOCIATION IN SAN FRANCISCO

Whereas, The license to practice medicine and surgery in many countries is limited strictly to citizens of these countries; and

Whereas, In addition to holding full citizenship, each applicant is required in several of these countries to show that his medical education was pursued and completed in said countries; and

Whereas, Many foreign graduates in medicine and surgery in increasing numbers are seeking admittance to the practice of medicine in these United States; and

Whereas, In order to convey adequately to these applicants a full and satisfactory knowledge of the American conception of patriotism and of ethical ideals in medicine, it is necessary that a period of residence be required; therefore, be it

RESOLVED, That in addition to the requirements for foreign graduates, as outlined in a resolution adopted by the House of Delegates for the American Medical Association in 1936, it is highly desirable that an additional requirement of full citizenship in the United States of America be demanded; and be it further

RESOLVED, That the House of Delegates of the American Medical Association approve the foregoing and that a copy be sent to the properly constituted officers of each examining board of the United States and to the Federation of State Medical Boards, with the request that they consider seriously urgent need for the adoption of such rules and/or legislation necessary to put the purposes of these resolutions into effect.

SUIT INSTITUTED AGAINST GROUP HEALTH ASSOCIATION BY PHYSICIANS

Society Issues Public Statement

Suit in equity in the District Court of the United States for the District of Columbia was instituted against Group Health Association, Incorporated, by Doctors Sterling Ruffin, Prentiss Willson and Elijah W. Titus, on behalf of themselves and all other members of the medical profession licensed to practice medicine in the District of Columbia to restrain and enjoin Group Health from engaging in the practice of medicine in said District, in violation of the Act of Congress known as "The Healing Arts Practice Act."

One of the objects of the suit is to maintain the highest standards of scientific and ethical practice of medicine and surgery, and to safeguard the public interest.

By the suit it is sought to enjoin Group Health from engaging in activities which constitute "an infringement and encroachment upon the franchises granted to each of the plaintiffs herein, and all other licentiates similarly situated, engaged in the practice of medicine and surgery in the District of Columbia, in the exercise of the privileges, and in the enjoyment of the rights conferred upon them, and each of them, by virtue of having been licensed to practice medicine and surgery in said District pursuant to the Act of Congress aforesaid."

In the bill of complaint it is asserted that the decree entered by Justice Bailey on July 29, 1938, in the proceedings instituted by Group Health under the Declaratory Judgments Act of 1934 "is erroneous, is without warrant of law, and is contrary to settled principles of law."

The physicians take the position that inasmuch as they were not parties to that proceeding, the decree entered by Justice Bailey is not binding on them and did not and could not "adjudicate or determine any of the rights and privileges of plaintiffs, in the exercise of their respective franchises as licentiates duly licensed to practice medicine and surgery in the District of Columbia."

The Solicitor General of the United States having decided that the District Attorney would not appeal from the decree entered by Justice Bailey, the members of the medical profession felt that it was necessary that this suit be filed so that all questions as to the legality or illegality of the activities of Group Health Association may be decided by the highest court of the District of Columbia.

On behalf of the physicians who brought the suit, it is stated that the proceeding instituted by Group Health under the Declaratory Judgments Act was in the nature of a "friendly suit." In the suit instituted, it is hoped that there will be a real contest of the grave and important questions involved, and that the final determination thereof by the court of last resort will set at rest all legal questions involved in the operations of Group Health. It was considered to be in the interest of all concerned, especially the general public, that these important issues be authoritatively adjudicated as expeditiously as possible.

The physicians bringing this suit, wish to make it clear that their action is not to be construed to mean that they are opposed to the introduction of properly safeguarded methods for the distribution of medical care within the means of individuals in the low-income groups. They recognize that the delivery of such medical care presents a problem which should receive serious thought of the medical profession and all other interested groups.

In connection with the suit, the Medical Society of the District of Columbia issued the following statement:

The Medical Society considers it a duty to the thousands of citizens whom its members serve to make clear its position in the controversy which has occupied public attention for the past few months. In its opinion grave injustices have been done the medical profession of this community. Strong prejudices have been aroused on matters which are not generally understood by the public. If accusations made against the Medical Society affected only its members there would be no need for concern on the part of the people. However, they are of such a nature as to have very large implications in the lives of every person in this country.

Charges have been made that the Medical Society has for selfish reasons opposed changes in the method providing medical care, particularly to those of low income who find it difficult to pay for needed service. Nothing could be farther from the truth for the primary concern of the Medical Society has been and will always be the health of the people. If it should fail in this regard, it would deservedly forfeit the public confidence, but it has not failed. No group in this community has demonstrated adherence to higher ideals or shown a greater willingness to be of public service regardless of the financial considerations involved. Some individuals in the medical profession, just as in any other group, have not measured up to obligations placed upon them, but by persistent effort the Medical Society has made possible the high standards of medical practice which exist today.

There are many misconceptions in the public mind about medical ethics, the impression often being given that they have been adopted to protect practitioners. This is not true. Ethics are rules of conduct governing physicians in their relations with patients and for the protection of the latter. If adherence to these rules were not required of members by the Medical Society of the District of Columbia and other official medical organizations, medical practice would not be on the high level it now is. It is, of course, true that even in this regard there is opportunity for improvement, but the goal is the highest set by any profession in this country.

Obviously rules governing professional conduct must be enforced only by the medical profession itself. This right to judge its own members is a privilege which is common to all organized groups. It has been vested by physicians in their official organizations of which the Medical Society of the District of Columbia is the local unit.

If a situation arises, such as it has with the Group Health Association, where the Medical Society feels that the best interests of the public are not being served, it should enjoy the same privilege granted any other group of citizens to oppose it. The Medical Society recognizes that this must be done in a manner which will not reflect on the honesty and sincerity of the medical profession, or adversely affect public interest, and it believes that it has so acted.

Propaganda on behalf of the Group Health Association, which has been widely disseminated, has given the impression that the Medical Society is unconcerned with the needs of the people and that it opposes experimentation because experiments may adversely affect the income of its members. This is grossly unfair. True it opposes many schemes which in its judgment are unsound. It has also been impressed with the fact that Government officials have taken more than ordinary interest in the Group Health Association. This is deeply significant and would indicate that the Association can in no sense be considered an isolated experiment. On the other hand the Medical Society recognizes that inadequacies in the delivery of medical care do exist, largely because of the country's economic situation. It recognizes, too, that although great advances have been made in medical science, social progress has lagged.

Social problems relating to medicine have given the medical profession much concern and their solution has received the earnest consideration of many of the leading physicians of this community, many of whom have given much study to this matter. These physicians, as members of the Medical Society's committees, have sought and still seek the coöperation of all groups in an endeavor to meet public needs and demands. They appreciate the fact that this is a problem which is of concern to every citizen.

At the present time the Medical Society is carrying on a thorough study of the need and supply of medical care in the District of Columbia, in coöperation with public and private organizations. With the aid of these groups it is hoped to determine facts upon which to base a constructive program. Concurrently the Medical Society is also working on a plan to provide medical care to the low-income group on a monthly-payment basis. It is contemplated that this plan will receive the consideration of the Medical Society at its first meeting in October. If approved, it will be submitted to civic and other interested organizations requesting their coöperation. Development of such a program must proceed with care so that the best interests of the people will be served.

The Medical Society recognizes the need for the extension of preventive services as proposed by the United States Public Health Service. It pledges its wholehearted aid in the development of the proposed program. The Medical Society, however, does not believe that Government control of medical practice, whether it be by Federal, state, or local government, is in the best interests of the people of this country. It believes that the Medical Society can, in coöperation with private and public groups, develop methods which will assure medical care to everyone without regimentation of patients or physicians. To this end it will gladly consider with Government officials the manner in which this may be accomplished.

More adequate medical care for the indigent in many communities is needed. There is evidence that this is true in the District of Columbia and the Medical Society stands ready to consider with public officials ways and means by which this can best be accomplished.

NEWS AND PERSONALS

The Committee on Medical Economics expects to conclude its study of the need and supply of medical care in the District of Columbia about September 15. A report of the results of the investigations will be made at an early meeting of the Society in the fall. In the meantime the Committee is pursuing its work on a prepayment medical service program which it hopes to have completed about the same time.

A Health Exhibit, similar to the Hall of Health sponsored by the State Medical Society of Wisconsin last year in connection with its annual meeting, has been considered by the Committee on Public Information. The Executive Committee has requested the Committee to make an investigation of the possibilities of such a project in Washington. Nearly 150,000 persons viewed the Hall of Health at Milwaukee last year. The officials of the American Medical Association, who visited the exhibit, had much praise for it. Dr. Herman S. Hoffman, a member of the Committee, has been delegated to obtain information about the Hall of Health and similar exhibits which have been conducted throughout the country.

The reorganized Speakers' Bureau, sponsored by the Committee on Public Information is now in operation. One hundred and twenty-one physicians have indicated that they will participate. The Bureau will be operated in the following manner: Luncheon groups, business organizations, Parent-Teacher groups, and other lay associations will select a topic from the list which will be provided. The physician's name will not be given until the topic has been selected. The speaker will then be notified of the date, place and time of meeting and the organization will be informed of the manner in which the speaker is to be introduced. The organization will be called upon to inform the Society of its satisfaction with the talk given. Physicians participating will be required to submit an outline of the proposed talk to the Committee before a talk is given. Rules governing the giving of talks will be provided each participant. The Bureau will prove a very important factor in the Society's lay educational program. Additional speakers are needed and members who have not volunteered for this service, if they are equipped to give talks to lay groups, are urged to do so.

The American Board of Internal Medicine, Inc., announces that written examinations for certification by the Board will be held in various parts of the United States on Monday, October 17, 1938, and February 20, 1939. Formal application must be received by the Secretary before September 15, for the October, 1938, examination, and on or before January 1, for the February, 1939, examination. Application forms may be obtained from William S. Middleton, M.D., Secretary-Treasurer, 1301 University Avenue, Madison, Wisconsin.

The Third Annual Alumni Extension Course of the Georgetown University School of Medicine will be held this year from September 12 to 16, inclusive. The scope of the program is sufficiently broad to offer general sessions and clinics of interest to all general practitioners of medicine, and a variety of special clinics and conferences for the satisfaction of those whose practice is limited to one field of medical science. As in the past the program will be presented by renowned guest speakers and members of the faculty. A feature of this year's course is the fact that it is being sponsored by the Silver Jubilee Class of 1913, many of whose members will present papers or conduct clinics.

Medicine.—In the field of internal medicine the following subjects will be discussed: the treatment of syphilis from a public health standpoint, diseases of the blood, the clinical aspects of oxyuriasis, the treatment of epidemic meningitis, the etiology of scarlet fever, the treatment of pneumonia, arterial hypotension, the diagnosis and treatment of diabetic coma, emotional factors in gastro-intestinal diseases, why, when and how to amputate, running a blood bank, and the present status of knowledge of sulfanilamide.

Among the guest speakers will be **Dr. R. A. Vonderlehr,** Assistant Surgeon General, United States Public Health Service; **Dr. Frederick J. Brady,** National Institute of Health; **Dr. Sara E. Branham,** National Institute of Health; **Dr. Milton V. Veldee,** National Institute of Health; **Dr. Sanford M. Rosenthal,** National Institute of Health; **Dr. Albert J. Sullivan,** Chief Resident Physician, Gallinger Municipal Hospital; **Dr. J. Ross Veal,** Chief Resident Sureon, Gallinger Municipal Hospital; and **Dr. Harry F. Dowling,** George Washington University School of Medicine.

Surgery and Allied Specialties.—Operative clinics will be held at the Georgetown University Hospital, the Gallinger Municipal Hospital and the Providence Hospital almost daily. There will also be surgical motion pictures. Special clinics will be given in obstetric surgery, proctology, urology, neurosurgery, ear, nose and throat, including bronchoscopy, ophthalmology and radiology.

Among the guest speakers will be **Dr. Dean Lewis,** Professor of Surgery, Johns Hopkins University School of Medicine, and **Dr. Frank Lahey,** of the Lahey Clinic, Boston; **Dr. George Tully Vaughan,** Emeritus Professor of Surgery, Georgetown University School of Medicine, will talk on the subject of appendicitis.

Obstetrics and Gynecology.—Operative clinics will be held in both obstetrics and gynecology. Lectures will be given on the following subjects: Lipiodol tubal inflation as an aid to fertility, radiographic pelvimetry, cancer of the cervix complicating pregnancy, lantern demonstration of the mechanism of labor, the management of obstetrical hemorrhages, abortion.

The guest speaker will be **Dr. Nicholas Eastman,** Professor of Obstetrics, Johns Hopkins University School of Medicine. Another guest speaker will be **Dr. Edward H. Richardson,** of the Department of Gynecology of Johns Hopkins University, who will discuss his operation for uterine prolapse.

Pediatrics.—Besides clinics and demonstrations the following subjects will be discussed: the pneumonias of childhood, diseases of the blood, obstructive diseases of the trachea and larynx, immunization procedures, use of common procedures in the treatment of children.

Pathology.—Clinical pathological conferences will be held.

Psychiatry.—Discussion of the treatment of dementia praecox with metrazol by **Dr. Sigmond M. Lebenshon.**

Distinguished alumni who will present papers are: **Dr. Jerome Selinger,** Associate Professor of Clinical Surgery, Columbia University Post-Graduate School; **Dr. John Mark Higgins** of Sayre, Pa.; **Dr. Frank C. McCormack,** Chief Surgeon, Holy Name Hospital, Teaneck, N. J.; **Dr. Constantine G. Psaki, Dr. Lester Neuman,** and **Dr. John F. Brennan.**

Golf Tournament.—A golf tournament will be held as usual on Thursday afternoon, September 15, on the splendid course of the Georgetown Preparatory School. Arrangements are in charge of Dr. John J. Mattare.

Alumni Banquet.—A shore dinner will be held on Friday evening, September 16, with entertainment and dancing. The party will not break up early. The alumni and their ladies are expected to attend. This will be a gala occasion.

WARNING!

Solicitors have been calling on physicians in the District of Columbia soliciting funds that promote various social and other enterprises. Some of these are imposters.

Unless solicitors are known personally to members, contributions should not be made without investigation. Their responsibility can be determined for you at the Society's Office.

RADIO BROADCASTS

Medical Society of the District of Columbia

The Committee on Public Information has released the following program to be presented over Station WMAL, at 10:45 A.M., each Wednesday:

August 3: Baby's First Summer.
August 10: Hay Fever Time: Common Mistakes.
August 17: Traffic Tragedies.
August 24: Preventing Trouble—Lockjaw Antitoxin.
August 31: Deafness.
September 7: School Opens—Preparing the Child
September 14: School Opens—Preparing the Child.

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CRITERIA FOR THE EARLY DIAGNOSIS OF CANCER OF THE STOMACH

WITH A CRITICAL ANALYSIS OF THE VALUE OF FLEXIBLE-TUBE GASTROSCOPY*†

FRED A. J. GEIER, M.D.
Instructor in Clinical Medicine, Georgetown University School of Medicine

INCIDENCE

There is an imperative need for a revaluation of our knowledge concerning the problem of cancer, especially from the standpoint of early diagnosis, since deaths from this devastating disease are apparently increasing with appalling rapidity. Although this paper is concerned chiefly with cancer of the stomach, a review of reliable mortality statistics reveals pertinent facts regarding cancer generally, and will be reviewed briefly because of their value in any comparative study of such an important problem. In 1934 there were 134,428 deaths from cancer in the United States, and this figure increased to 142,612 during the year of 1936. In addition, cancer as a principal cause of death rose from a relative position of ninth in 1900 to a more conspicuous position of second during 1935, being outranked only by heart disease. Furthermore, of these total cancer deaths, it is estimated that 35 to 40 per cent, or over 50,000 persons, died from cancer of the stomach. In the District of Columbia the problem appears even more alarming since our Health Department[1] reveals that the death rate from cancer here is higher than in the Nation as a whole. The incidence of cancer is illustrated by figures recently released by the Health Department (Table 1).

TABLE 1

Number of Deaths from Cancer per 100,000 for the District of Columbia and the United States During the Last Ten Years

YEAR	DISTRICT OF COLUMBIA	UNITED STATES
1928	110.1	95.9
1929	115.2	95.9
1930	136.4	97.2
1931	134.6	98.9
1932	146.5	102.1
1933	149.6	102.2
1934	153.7	106.2
1935	131.1	107.9
1936	138.6	111.0
1937	140.0	

During 1937 there were 8,723 deaths reported from all causes in the District of Columbia. Of this number 879 were due to malignant neoplasms, and of these 125, or 14.2 per cent, were due to cancer of the stomach, an incidence which is considerably below the basic average of 40 per cent for the entire Nation. Of these 125 deaths, 83 were in the white and 42 in the colored race. The number of deaths of males was greater than that of females in both races, with the age incidence in both groups indicating a steady upward trend with advancing years.

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* Read at the Annual Scientific Assembly of the Society, May 5, 1938.

† From the Clinic of Drs. Clark, King and Geier.

I have approached cancer mortality statistics with a deep appreciation of the many ramifications, limitations and pitfalls, and I am fully aware that many controversial issues are involved, yet, in the light of our present knowledge, I am fully convinced that deaths from gastric cancer are showing a definite and perceptible annual increase. Broadly speaking, this increase may be due to many factors, such as greater care being exercised in the compilation of mortality statistics, increase in longevity, and the employment of more refined diagnostic aids such as X-ray and flexible-tube gastroscopy. Statistics aid in the early diagnosis of cancer by focusing the public mind on a problem national in scope, and this in turn stimulates research and clinical investigation. The knowledge thus obtained provides an effective weapon in directing persons past 40 years of age to have periodic health examinations.

In no other disease is the need for early diagnosis more important than in cancer of the stomach. It is essential for cure that the earliest manifestations of this condition be recognized and proper treatment instituted. It is axiomatic that when the typical or classical symptoms of cancer of the stomach are present they usually represent a late stage in which the only measures of relief that can be afforded the patient are of a palliative nature.

Analysis of Sixty-four Cases

I have analyzed a series of 64 proved cases of gastric carcinoma which have occurred in private practice during the past 10 years, and the following pertinent facts have been elicited (Chart 1). The disease affected men almost twice as frequently as women, there being 41 males and 23 females. There were 4 members of the Jewish race in this series, 2 males and 2 females, showing no immunity as a class to this disease. Although all cases occurred between the ages of 40 and 80, the majority were between the ages of 60 and 70 in the men, and 50 and 60 in the women. There were 59 married and 5 single persons. The question of heredity is interesting, since 13 patients gave a family history of cancer, and of these, 3 were cancers of the stomach (Chart 2). From the standpoint of occupation, there were 12 office workers, 11 housewives, 6 farmers, 4 salesmen, 3 carpenters, 3 teachers, 12 merchants, and 17 unemployed or retired. There were 24 patients from whom a history of urinary disturbance, chiefly nocturia, could be obtained; while there were very few instances of symptoms referable to the respiratory or cardiovascular systems. Fifty-two patients led an active life, and a considerable number were outdoors for adequate recreational exercise. There were 48 users of coffee, averaging 2 cups daily, while only 11 used tea. Twenty-eight patients used tobacco in moderation and only 7 drank alcohol. In obtaining the history great stress was placed upon the chief complaints when the patients presented themselves for examination. It was noted that the majority localized their distress in the upper midabdomen and complained of epigastric distress, gnawing, pain, fullness or pressure discomfort. There were 41 who had either nausea,

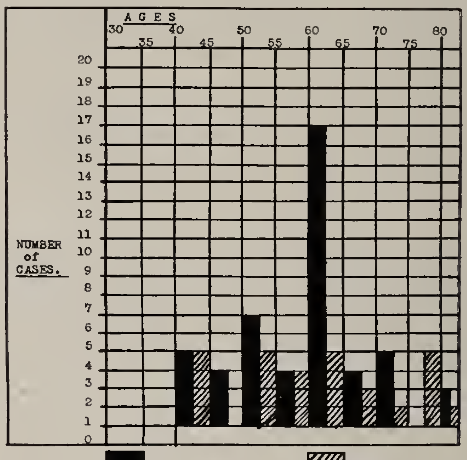

Chart 1. Age and Sex Incidence in 64 Cases of Cancer of the Stomach

vomiting, or both; and in 33 of these cases a partial or complete pyloric obstruction was found.

The duration of symptoms in all cases was extremely variable. The shortest history was 3 weeks, and the longest 8 years. However, the majority were found to have had an average history of 6 months in the case of males and 8 months in the case of females. The important point of this observation is that the patients in most instances did not seek medical attention until many months after the onset of their symptoms. In 28 cases, or 43.7 per cent, the first manifestation was epigastric pain, while loss of weight and anorexia were of less frequent occurrence. Although there is no pathognomonic early symptom, it would seem justifiable to place emphasis upon this one complaint of epigastric pain in any public or medical campaign directed toward cancer control. The question of appetite is apt to be misleading, since this study reveals 15 patients with a good appetite, 15 with a fair appetite and 34 with anorexia; therefore the state of appetite can be of little value in the early diagnosis. Although the majority of patients had constipation, this again cannot be stressed as important. The consideration of foods that disagreed with these patients showed a few to have an aversion toward meat and sweets.

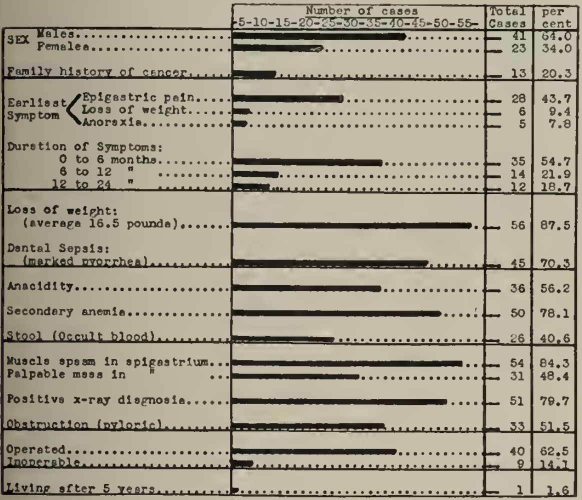

Chart 2. Comparative Data of 64 Cases of Cancer of the Stomach

Turning to the physical examination, I was tremendously impressed with the predominance of four findings. In the first instance, 98 per cent of the patients showed a state of undernutrition ranging from 1 to 48 pounds. This, of course, is not an unusual finding. However, in the second instance, the frequent occurrence of dental infection was a rather startling observation. In the 64 cases, 12 had complete dentures, and in the remaining 52 cases there were 45 patients, or 86.5 per cent, who had marked dental infection characterized by caries, gum recession, or extensive and advanced pyorrhea alveolaris. This high incidence of oral infection should be emphasized in order that we may consider it seriously from the standpoint of prophylaxis as it relates to gastritis. The remaining two relatively constant physical findings were the presence of epigastric muscle spasm or resistance, which was present in 54 cases, and the finding of a palpable mass in 31 instances. The presence of a palpable mass is a notoriously late manifestation of gastric cancer and unfortunately in most instances represents an inoperable stage of the disease.

From the laboratory standpoint, secondary anemia was present in 4 out of 5 cases, while in 7 cases the leukocyte count was over 15,000. No significant changes were found in the differential white cell count. The gastric analysis revealed anacidity in 56 per cent of the patients, with normal acid levels present in 13 instances. Of the 36 cases with anacidity, lactic acid was also found in 30. Occult blood was present in the stool in 40 per cent of all of the cases. The value of X-ray examination in the diagnosis is shown by an accuracy of 79.7 per cent, while indecisive information was obtained in 9 cases; and in 3 cases the lesion could not be demonstrated. Of the 64 cases, 40 came to operation, and of this number 33 had a relatively high degree of pyloric obstruction. Of the entire series of 64 cases of gastric carcinoma, only 1 patient survives today, a fact which discloses a mortality of 98.5 per cent.

A comparison of this series of 64 cases with those collected by Smithies[2] reveals a few interesting differences. For example, he analyzed

921 cases of proved carcinoma of the stomach and found 693 males and 228 females, or a ratio of 3 to 1. The disease occurred principally between the ages of 60 and 70. He noted that farming was the predominating occupation, but this may be explained by the lack of adequate diagnostic facilities in the rural area, and by the fact that most of his patients came from a large farming belt in the midwestern states. He failed to demonstrate any relationship between the quantitative and qualitative food intake and the incidence of gastric carcinoma. He determined that as many patients indulged in alcohol and tobacco as abstained.

ETIOLOGY

It is a generally accepted conclusion that the etiology of carcinoma of the stomach is unknown, although many theories of its occurrence have been proposed. Of these, many predisposing factors have been suspected, such as an hereditary predisposition, environment and preexisting gastritis. It is exceedingly difficult to evaluate the influence of heredity because of the great variation in statistics. Smithies[2], for example, obtained a family history of malignancy in 8.5 per cent of his patients as compared to 20.3 per cent in my series. Although many investigators of cancer hold firmly to the belief of hereditary influence, a review of the literature fails to support their views. This seems to be especially true from a purely clinical standpoint. Racial incidence likewise will continue to command attention, as it is a fact that carcinoma of the stomach is relatively unknown in Egypt, Persia, Turkey, and among the Malays of Java. Newer concepts regarding the etiology of gastric carcinoma are extremely interesting and of increasing importance. If one is to follow the reasoning of Faber,[3] Hurst,[4] Konjetzny[5] and others who believe that gastritis is the cause or a precursor of gastric carcinoma, then we must admit the presumptive influence of highly seasoned foods, alcohol, tobacco, and infection in the development of this disease. In support of this view are the voluminous scientific papers showing the close relationship between gastritis and carcinoma of the stomach. Konjetzny[5] has shown convincing pathologic evidence of the transition from gastritis to gastric carcinoma, while Faber[3] finds gastritis to be the principal cause of anacidity in his histologic studies of formalin-fixed stomachs. Faber has further observed a close correlation between anacidity and gastritis in support of the view that chronic gastritis leads to carcinoma. On the other hand, Brown[6] contends that practically every gastric cancer, after a certain length of time, leads to chronic gastritis and often to atrophic gastritis with achylia. It may be that both interpretations are correct, but certainly from a gastroscopic viewpoint the evidence favors chronic gastritis as the most common precursor of gastric carcinoma. One must bear in mind that, since the introduction of the Schindler flexible gastroscope, gastritis has emerged from the darkness of obscure and debatable existence to become the most frequent disease of the stomach. Its existence as a disease entity appears to be of fundamental importance when considering the genesis of gastric carcinoma. If these facts are generally accepted, then our problem of early diagnosis of this devastating disease must be directed primarily toward the early recognition of chronic gastritis and associated lesions which are potentially degenerative in nature. Katsch, Prevot, Henning[7] and others further emphasize the important part played in the etiology of gastric cancer by a preceding or concomitant gastritis when associated with adenomas or polyps, which were frequently found in their cases.

The relationship between gastric ulcer and carcinoma has been a debatable subject for many years. It is obvious that any suspected gastric ulcer should be considered a potential carcinoma until proved otherwise. This may have to be decided gastroscopically, although Schindler[8] states: "In those cases of gastric ulcer which I have been able to follow gastroscopically over a period of several years I have never seen carcinoma develop."

Benign lesions, such as polyps, are unquestionably a potent factor in the development of gastric cancer and must be so considered. I recall distinctly a case of pernicious anemia in which gastroscopy revealed with amazing clearness a small polyp on the anterior wall of the stomach undergoing ulceration and malignant degeneration.

PATHOLOGIC CONSIDERATIONS

The morbid anatomy of gastric carcinoma, as it relates to early diagnosis, is important if for no other reason than to show its many variations. The commonly recognized types are adenocarcinoma, medullary carcinoma, scirrhous carcinoma and colloid carcinoma. Adenocarcinoma, which is the most common and undergoes early ulcerative degeneration, is the type which Ewing[9] classifies as carcinoma following peptic ulcer, although this latter possibility is still a debatable question. Medullary carcinoma, or the so-called cauliflower type, is soft, vascular and nodular, grows rapidly and metastasizes early. Scirrhous carcinoma is characterized by a firm type of connective tissue growth which causes diffuse thickening of the layers with cicatricial contraction of the stomach. The colloid carcinoma is a relatively rare type of gastric cancer having a jelly-like appearance due to the mucoid degeneration of the cells; it commonly favors the pylorus for invasion. From the standpoint of prognosis and therapy it is obvious that a knowledge of the characteristics as well as early diagnosis of these tumors is essential for recovery. The clinician, gastroscopist and roentgenologist are in the best position to determine the clinical manifestations, site and operability of the tumor; while the surgeon must determine the operative procedure, which is often dependent on the degree of metastasis and the pathologist's report of frozen sections. Tumors which early in their development produce recognizable disturbances of gastric function present the greatest opportunity for early diagnosis and a possible reduction in mortality. From 35 to 50 per cent of gastric carcinomas affect the pylorus, while 25 per cent are on the lesser curvature, with the remainder involving the other parts of the stomach. These figures are naturally subject to great variation, depending largely upon the type and stage of the disease together with the series of cases studied. In my series of 64 cases the predominating site was the pylorus in 40 instances, and of this number 33 produced some degree of obstruction. Unfortunately, obstruction denoted a late manifestation of the disease in those patients who had a surgical exploration, with the exception of one man. In this particular case, operation revealed no metastatic involvement and pyloroplasty with complete extirpation of the mass has resulted in a 5-year cure.

THE HISTORY

In pursuit of facts which might enable us to more accurately recognize early manifestations of gastric carcinoma we must critically review our knowledge obtained from a careful history. In a diligent interrogation of the patient it would be a simple matter if we could elicit some clue or symptom that would arouse our suspicions sufficiently to direct our attention to the possibility of this disease being present. What hope is offered by a careful history? Are there any characteristic early symptoms? In answering these questions we must assume in this discussion that epigastric pain, anorexia, "indigestion" in its broadest sense, loss of weight and weakness are late symptoms of the disease. At least they are not pathognomonic, and Brown[6] states that there are no early symptoms, and Christian[10] is equally pessimistic. It is true that pain is often absent, and when present it is not characteristic. The broad interpretation of this statement is no doubt true, yet I find difficulty in reconciling this belief with the fact that 28 of my 64 patients, or 43.7 per cent, indicated that their very first symptom was epigastric pain. It is true that the pain was indefinite as to its duration and severity and in its relation to the quantity or character of food eaten; but, on the other hand, one should not limit its value to the extent of rendering it inconsequential from the standpoint of early diagnostic possibilities. At least, it is generally agreed that any vigorous cancer campaign should stress the importance of upper abdominal pain in those over 40 years of age and should insist that they investigate its nature. Another common complaint is anorexia. Here is probably the most frequent symptom encountered in both the early and late stages of the disease, and often this aversion is toward meat. Obviously, this is not a pathognomonic sign, although some loss of appetite occurred in 76 per cent of our cases. I have been repeatedly impressed with the rather curious and intriguing mental trait of many gastric cancer patients while taking their histories. They were composed, at ease, extroverted, unconcerned, and showed a tendency to minimize their symptoms. In addition, they seemed to be seeking medical aid more to satisfy their friends or relatives, or in other words, to "keep peace in the family." They showed no evidence of fear that "something serious might be wrong," and, as a matter of fact, appeared to be a direct antithesis of neurotic patients suffering from cancerphobia. Certainly, my suspicions are more apt to be aroused in these patients if they complain of "just a little indigestion and vague discomfort after eating." The importance of history, then, seems to resolve itself into a personal equation, with the physician constantly on the alert, especially when he is taking a history from an adult past 40 years of age from whom he elicits a history of previous good health with recent indigestion. The evaluation of insidious symptoms is a most trying problem and much depends upon their proper interpretation.

Rehfuss[11] believes there is a latent stage in the development of gastric carcinoma and states that "while it is true that one growth will evolve with great rapidity, another will grow slowly, giving rise to subjective symptoms"; furthermore, "that in the average case it is probably 3 or 4 months, or longer, before the disease produces any symptoms which make the patient seriously consider the state of his health. It is this latent period, pregnant with possibilities in the direction of treatment, and so devastating in its effect on the individual if not treated, that must demand the attention of the medical public."

Physical Examination

Although a complete and careful physical examination is essential, one must not be misled by negative findings in a suspected case of gastric carcinoma. Likewise, a picture of emaciation, pallor, and a palpable mass in the upper abdomen usually indicate a late stage of the disease. In collecting physical evidence for early diagnosis, one must search particularly for foci of infection, especially of the paranasal sinuses and mouth. I find it difficult to interpret the high incidence of pyorrhea alveolaris in my cases, and yet it must be considered an important finding until proved otherwise. It would appear that the dental infection certainly antedated the development of gastric cancer, and that probably the intermediary step was gastritis. Even if this interpretation lacks adequate clinical confirmation, it would appear wise to eradicate potential predisposing factors, especially as they relate to gastritis.

Other equally important points to remember in the physical examination are temperature, weight, and careful palpation of the abdomen, especially for muscular resistance. An unexplained fever may be important, although its presence in approximately one half of the cases of gastric carcinoma indicates an advanced stage of the disease. The presence of undernutrition must be satisfactorily explained, as well as muscular resistance in the abdomen; and when doubt exists, further studies should be made.

Diagnostic Aids

In any suspected case of gastric carcinoma it is essential that certain laboratory examinations be done and the results correlated with the clinical findings. Of special diagnostic value are the studies of the fasting gastric residuum, together with fractional gastric analysis and blood and stool examinations. In the fasting gastric residuum the significant findings are a diminished quantity of gastric juice containing sediment and microscopically demonstrable exfoliated gastric mucosal cells, leukocytes, red blood cells, bacteria and particularly food particles. Eusterman[12] noted that in 60 per cent of resectable lesions, and in 40 per cent of small carcinomatous lesions, gastric retention is present and is of some significance, especially if this complication develops early in the course of the disease. Obviously, the cytologic demonstration of malignant cells is pathognomonic of gastric cancer. The fractional gastric analysis, using the Ewald meal, gives additional information, especially when achlorhydria or hypochlorhydria is present, and in the cases of achlorhydria the histamine technic is recommended. It must be remembered that occasionally normal acid values, and even hyperchlorhydria, are found in early cases. The presence of lactic acid indicates stagnation in the absence of free hydrochloric acid, and the finding of the Oppler-Boas bacillus has the same significance. In doubtful cases the gastric secretion may be examined for protein content, using the Wolff-Junghans reagent. An increase in the dissolved albumin is presumptive evidence of disintegrating lesion (Chart 3). Smithies points out that when the test was properly performed it was positive or suspicious in 80 per cent of his series of gastric cancer, and the dissolved albumin was found more consistently than achlorhydria or lactic acid.

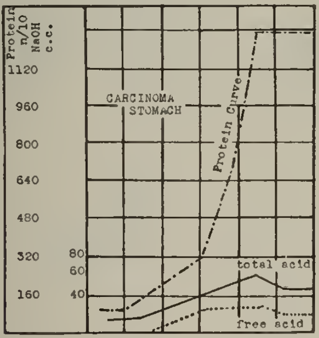

Chart 3. Subacidity in Gastric Carcinoma with Soluble Albumin Curve (after Rehfuss)

Examination of the blood and stool at times gives valuable information, and in no case should it be neglected. Although the blood count may be normal, in the majority of cases of gastric carcinoma there is anemia, often of the macrocytic variety. Malignancy should also be suspected if there is an additional markedly increased sedimentation rate of the red blood cells. The presence of occult blood in the stool likewise is significant, although not infallible, as an adjunct to diagnosis. However, when blood is found repeatedly after meat, fish, soups, or fowl have been withheld for 72 hours from the diet, it has a distinct value. Recently, as indicated by Konzelmann[13] and others, the Gruskin test for malignancy has been found helpful as a diagnostic procedure in selected cases. The Gruskin method, as cited by Pratt,[14] is a test for malignancy based on the fundamental consideration that malignant cells are born embryonic, in contradistinction to normal cells, which are born embryonic but which mature. The test for carcinoma is further based on injection of an embryonic antigen made from the most embryonic cells known, namely, epithelial cells from the embryonic calves' pancreas, or liver. Pratt, collaborating with Gruskin, studied 100 patients and found 92 per cent of correct results and 76.9 per cent with correct negative reactions. In conclusion, he states: "These figures show that the positive reaction to the Gruskin test did not agree with the results of clinical observations in 8 instances. Some of these 8 patients may later show clinical evidence of malignant change, while more observations on the possibilities of the Gruskin test are necessary before one may advocate its acceptance over clinical judgment. The results so far are extremely encouraging."

Roentgenologic Diagnosis

Finally, in the diagnosis of any gastric disease, it must be acknowledged that the two most valuable methods at our disposal are X-ray examination and gastroscopy. These do not represent competitive procedures, but are supplementary, and this increasing reciprocal dependence has definitely increased our diagnostic accuracy. X-ray examination is inconclusive in the diagnosis of chronic gastritis, but, on the other hand, gastroscopic "blind spots," alterations in gastric motility, and evidence of obstruction are observed more conclusively. In any event, it is imperative that one insist upon a complete gastro-intestinal X-ray study in any adult patient with the slightest evidence of disturbed digestion, and, as a matter of fact, it should become a part of every periodic health examination. In the diagnosis of carcinoma of the stomach, the X-ray results are dependent upon two important factors, first, the skill and experience of the examiner, which are necessary in demonstrating a defect and, second, his ability to properly interpret indirect evidence of altered gastric function. By fluoroscopy, early evidence of alterations of the normal mucosal pattern can frequently be obtained by observing the distribution and behavior of a tablespoonful of condensed barium in the stomach, followed by 10 ounces of thin barium mixture. The increasing popularity and refinement of X-ray compression technic has enhanced our diagnostic accuracy and should be employed in doubtful cases.

At times, the X-ray differentiation of "antral gastritis" (Fig. 1) and carcinoma is extremely difficult, and often operation with resection and pathologic examination is necessary in order to establish the diagnosis. Since gastritis is one of the most frequent diseases of the stomach, its presence should be suspected in any case of constant prepyloric narrowing. Furthermore, gastritis is capable of producing diversified symptoms ranging from mild epigastric distress to peptic ulcer syndrome and in some instances may mimic the symptoms of carcinoma. Golden[15] has recently reviewed this very important problem from the roentgenologic standpoint and feels that many cases of gastritis produce changes in gastric form and function, demonstrable by the barium sulfate meal, which the radiologist must be prepared to recognize. He finds that in the narrowed prepyloric region the mucous membrane may be smooth and atrophic, increasing the similarity to annular infiltrating carcinoma. He also finds that this prepyloric narrowing is sometimes associated with a real penetrating ulcer and with mucosal erosions demonstrable only by the gastroscopist or by the pathologist. He concludes by acknowledging the difficulty in excluding carcinoma and feels that if doubt persists operation is advisable. The following case, occurring in my experience, further illustrates this point:

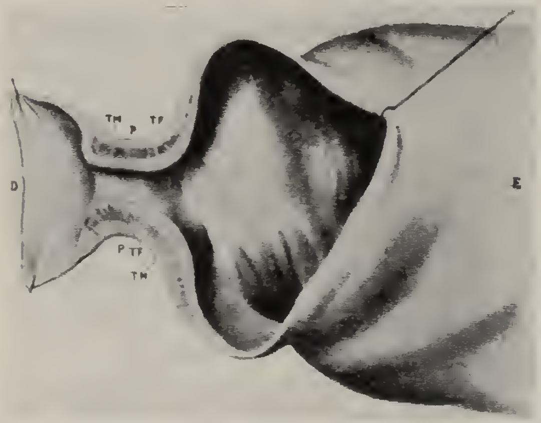

Fig. 1. Hypertrophy of Pyloric Muscle Causing Benign Narrowing of Pyloric Lumen (after Cruveilhier)

According to Serck-Hannsen gastritis is invariably present with such hypertrophy ("activity hypertrophy").

The patient, P. D., aged 28 years, was in good health until 10 years ago. At that time he had a ruptured appendix for which he had an appendectomy and drainage. He made an excellent recovery. His health was good until 3 years ago, at which time he had vague indigestion characterized by epigastric pain, nausea and slight loss of weight. The blood count showed marked secondary anemia and an absence of free hydrochloric acid in the stomach. He was treated with liver and iron and after about 6 months was greatly improved. He remained fairly well until 6 months ago, when he was in Boston. At that time he had a recurrence of anorexia, nausea and epigastric distress, aggravated by eating. Gastro-intestinal X-ray examination was entirely negative. On liver and iron therapy he seemed to improve fairly well until 3 months ago, when he came to Washington. Since that time he has been troubled with anorexia, nausea and some epigastric distress, not relieved by food or alkali, constipation and weakness. He has lost 9 pounds in 3 months. X-ray examination of the gastro-intestinal tract showed a constant, regular narrowing involving the entire antrum (Fig. 2), with no fixation, tenderness or palpable mass. There was a 15 per cent residue in the stomach after 6 hours. Recheck after the use of belladonna showed no change, and a diagnosis was made of "partially obstructing lesion involving the entire pylorus, probably scirrhous carcinoma." The plates were reviewed by several competent radiologists and the same conclusion reached. The laboratory reports were as follows: Wassermann and Kahn test negative; hemoglobin 90 per cent; erythrocytes, 5,000,000; leukocyte count and differential count normal; stool negative for occult blood, with a few Giardia lamblia present; gastric analysis negative for free hydrochloric acid, with total acidity of 120.

Gastroscopy was done with the following results: "The mucosa on the greater curvature aspect of the antrum was observed to be swollen, polypoid, and extremely dark red in color. A small irregularly shaped depression, having overhanging dark red mucosa and a black central portion, was seen. The entire antrum appeared distorted, and the gastroscopic impression was antral gastritis with ulceration, probably malignant, and perigastric adhesions."

Several days later an exploratory operation was performed. Marked thickening of the prepyloric region was found, and a considerable number of slightly enlarged glands were noted in the gastrohepatic and gastrocolic ligaments. A subtotal resection was done to remove the lesions and a Polya operation performed. On opening the jejunum very extensive polyposis was noted.

The pathologic report was as follows: "The stomach (paraffin section) shows a considerably thickened wall, all layers being involved in an inflammatory process. Superficially there is dense leukocytic infiltration, particularly invading the mucosa and adjacent areas of the muscularis. More deeply, and at various places, dense fibrosis has taken place. The mucosa is greatly distorted, and the epithelial structures are irregular and broken, although the cells are completely differentiated and sharply defined from the stroma. The process does not appear to be malignant. Diagnosis: Gastric ulcer, with antral gastritis."

Gastroscopy

Like any method of precision, gastroscopy requires special training in order to appreciate its limitations, contraindications, technic, orientation and interpretation. Under these circumstances flexible-tube gastroscopy with the Schindler[16] instrument has become a safe and practical procedure, to be employed in any case of gastric distress when available data are inconclusive. In such cases valuable information is obtained which can be profitably correlated with the clinical findings. It is common knowledge that for years chronic gastritis was never fully recognized as being of clinical importance, but at the present time, largely through the efforts of gastroscopists, gastritis is established as a disease entity. Likewise, the relationship between gastritis, ulcer, polyps and malignant disease of the stomach is better understood.

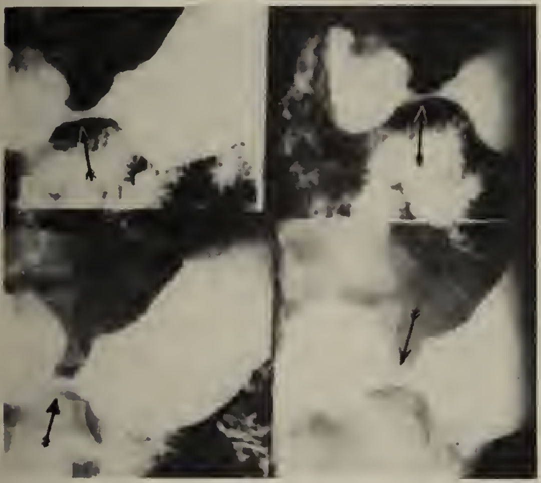

Fig. 2. Examples of Severe Prepyloric Narrowing Due to Gastric Carcinoma

There is no doubt that gastroscopy is of the greatest value in the diagnosis of gastric cancer. Those of us who have had the experience of receiving repeated negative X-ray reports of the stomach, together with other variable clinical evidence, are naturally enthusiastic over a method which distinctly demonstrates the presence of gastric cancer verified at operation. I have recently reported such a case, and it is not uncommon to find other instances of a similar nature in the literature. However, the reverse may be true, that is, the X-ray and other clinical evidence may be conclusive for carcinoma when the gastroscopist is unable to observe the lesion. This is apt to be the case when the condition is localized in one of the so-called gastroscopic "blind spots." In any event, the common purpose of all diagnostic methods is to recognize a malignant lesion in the early or incipient stage in order that a life-saving operation can be performed. It cannot be denied that the patient himself shares in this responsibility, and he must be educated to a point where he will recognize and realize the importance of periodic health examinations as a safeguard in the detection of this disease in its earliest evolutionary stages.

When one looks through the gastroscope and observes a malignant lesion, this is direct evidence of its presence. The distinguishing characteristics of the tumor have been described best by Schindler,[8] who suggests the following classification:

1. Polypoid carcinoma, which has a broad base, supporting numerous solid hemispherical elevations of different size. The color is orange-red and similar to the surrounding normal mucosa. It is at times difficult to differentiate it from polyps and hypertrophic gastritis. However, when ulceration occurs, its malignant nature is evident. Obviously, when discovered early and removed surgically, the prognosis is apt to be favorable.

2. Noninfiltrating carcinomatous ulcer, which is identified by a crater surrounded by a high wall of variable thickness. The floor of the ulcer may be covered with necrotic tissue of a gray, red or violet color. The appearance is pathognomonic, but the question of operability depends upon its location.

3. Infiltrating carcinomatous ulcer, which is characterized by a brilliant white base of irregular contour. The margin is not sharp and there is a gradual transition from the ulcer into the reddish peripheral mucosa.

4. Diffuse infiltrating carcinoma, which occurs in two forms, but is difficult to diagnose gastroscopically. It may occur as a diffuse or a partial scirrhous infiltration, and in either instance inflation of the stomach with air may be difficult because of the unpliable nature of the lesion. The prognosis in this type is very unfavorable.

The present status of gastroscopy is best exemplified by an editorial which recently appeared in the Journal of the American Medical Association,[17] which states: "The visualization of the gastric mucosa with the aid of the flexible gastroscope is no longer the dreaded ordeal attending the passage of the rigid instrument. The method is capable of furnishing much valuable information as to the presence, the character and the extent of a gastric lesion. It reveals inflammatory changes of the gastric mucosa not demonstrable by other methods. Again, science and medicine have benefited by the developments that have featured the coming of the machine age."

SUMMARY

Available mortality statistics indicate that the general death rate for cancer in the United States is increasing annually, and that the incidence in the District of Columbia is higher than in the Nation as a whole. Cancer of the stomach is one of the most devastating diseases which faces the medical profession for solution. The review of 64 proved cases of gastric carcinoma shows convincingly that recovery is impossible unless the condition can be recognized early. The clinical history revealed that males are more commonly affected than females; that the "cancer age" begins after 40; that 20 per cent had a family history of cancer; and that occupation was not apparently significant. The most common symptom of epigastric pain was of relatively short duration, while loss of weight and anorexia appeared to be a more latent manifestation of the disease. Physical examination revealed undernutrition and a strikingly high incidence of dental infection (pyorrhea alveolaris). Palpation of the abdomen elicited some degree of epigastric muscle spasm in 85 per cent of the cases and a tumor mass in 48 per cent.

Laboratory studies showed a rather consistent achlorhydria or hypoacidity and secondary anemia. Occult blood in the stool occurred in 40 per cent of the cases.

The X-ray examination indicated the lesion in 80 per cent of the patients, and in 50 per cent there was obstruction at the pylorus. While 60 per cent of the patients were operated upon, only 1 patient remains alive after 5 years.

Although the etiology of cancer is not definitely known, numerous theories have been discussed, of which gastritis, as a precursor of gastric carcinoma, appears the most plausible. The morbid anatomy of gastric carcinoma is variable and indicates no specificity of location for special types. The history is extremely important, especially when a patient in the fourth decade, or over, complains of abdominal discomfort, anorexia or loss of weight. It would also appear that some significance might be attached to personality traits. X-ray examination of the stomach has a high degree of diagnostic accuracy, especially when done by competent observers. The differentiation between antral gastritis and carcinoma is at times difficult. The value of gastroscopy is better understood and appears to be increasingly important as a diagnostic procedure. In my experience[18,19] this is especially true for lesions involving the mucosa.

CONCLUSIONS

Cancer of the stomach is a problem which must be attacked by an aggressive campaign, national in scope, in order to eliminate the increasing incidence.

Two fundamental principles are prerequisite to success, prophylaxis and early diagnosis.

The accomplishment of these aims depends upon acknowledgement that the responsibility is equally great for the public and the medical profession. In the first instance, adults over 35 years of agemust be taught to appreciate the necessity of periodic health examinations, and, in the second instance, physicians must employ proven diagnostic aids more freely. Both must be "cancer conscious."

The early diagnosis of cancer of the stomach is essential for cure.

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A PROGRAM FOR THE PREVENTION OF THE COMMON COMMUNICABLE DISEASES*

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It is the intention to discuss the common so-called contagious diseases with particular emphasis on immunizing procedures. This sort of program, if completely carried out will serve "to draw some of the teeth" of the propaganda issued by the advocates of socialized medicine who so unanimously accuse private medicine of failing to wholeheartedly stress preventive measures. Some idea of the importance of this question can be gained from the Contagious Disease Report of the District Health Department. In the year 1937, there were reported to the local authorities 17,960 cases of communicable diseases, and 1,697 fatalities resulted. One may only hazard the number of cases which were not reported. If accurate figures could be obtained, physicians would probably be appalled at the economic and social losses revealed by such a study. It is everyday experience and certainly nothing new to think of the irrepairable damage wrought to innumerable children each year these diseases go without effective check.

The first and possibly most important step in establishing such a program should be education of the lay public. As an illustration, we need go no further than diphtheria, against which we have a weapon practically perfect, yet I am sure that everyone engaged in pediatrics has encountered quite a number of parents who object to the immunization of their children. It seems that constant repetition of the advisability of taking advantage of all worth-while procedures will eventually overcome such objections and incidentally quiet the insinuation that insistence on such measures by the doctor is based only on selfish consideration.

A step of importance second only to lay education is accurate diagnosis and case-finding in order to isolate all active cases and prevent spread of the given disease to those susceptible. The diagnosis of such cases is not a matter of concern in this discussion. Case-finding and the detection of those susceptible, however, is properly part of a program of prevention and will be dealt with as the subject permits.

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A third factor in such a program, if it is to be an intelligent one, is development by the individual physician of an attitude of healthy criticism of the new methods that will be advanced from time to time. By that is meant the adoption of a mental attitude of "be not the first by whom the new is tried, nor yet the last to lay the old aside." It seems worth while to establish certain practical standards in this connection, as pediatrists are under constant bombardment by new methods of active immunization advocated by outstanding authorities in research or by popular hysteria. Shaw[1] states "all methods of immunization are not equally acceptable and before general use should be measured against the older and better established procedures. For the sake of comparison each method should be judged on the following criteria—effectiveness, usefulness and safety." Obviously a method that is not effective on a large scale or for a fairly long period of time can have but limited value. It is difficult to establish this point because of the many variables which enter into the subject: age, degree of natural immunity, extent of exposure, general condition and many others. To sum this up, it may be pointed out that a reliable laboratory test to prove the efficiency of a given method under all but most unusual circumstances would be most valuable. The method should be useful under the circumstances in which it is to be employed, that is, the method should have potentialities sufficient to overcome the natural disadvantages, namely, discomfort, risk and expense. Certainly it is safe to say that in Washington and surrounding territory it would be absurd to urge general immunization against yellow fever however desirable it may be elsewhere. The method proposed should be safe in proportion to the gravity of the situation that may fairly be said to exist without its use. Thus the medical profession knows that so far as the incidence and mortality rate in poliomyelitis are concerned, this disease is unduly exaggerated in the lay mind and in proportion to the risks run the general use of Kolmer or Park-Brodie vaccine is not warranted at this time. In contrast may be mentioned the use of diphtheria toxoid, the risk, discomfort and inconvenience to the individual, the administration of which is negligible by comparison with the effects of the unrestrained disease.

It is not my intention to discuss all of the communicable diseases but to limit consideration to those which are more common and generally encountered. It is not my intention either to enumerate those measures familiar to all—reporting, period of isolation, disinfection and so forth.

CHICKEN-POX

This communicable disease mainly affecting children from 2 to 4 years of age is, generally speaking, quite mild, as the 1937 Health Department figures reveal 1,047 cases and no deaths. Except for an occasional bad cosmetic result, in general, it may be regarded as more of a nuisance than a menace. Because the specific cause is not known and the disease is so insignificant in the vast majority of cases specific active immunization is not done, and having in mind the criteria discussed previously one may question whether such a lack is a distinct hardship on children. Isolation of active cases for 14 days from the onset or until all crusts disappear, however, should be employed. Some authorities have advocated the use of immune serum in all contacts, in order to bring about a passive immunity or to modify the disease and thus make it lighter on those not fully protected. This procedure is, in general, only justifiable in institutions or under very exceptional circumstances, but Lewis, Barenberg and Grossman,[2] writing of an outbreak in an infant home where they used adequate controls, a check they believe the majority of writers not to have used, conclude that "convalescent serum proved to be of no value in the prevention or mitigation of chicken-pox."

DIPHTHERIA

This is one communicable disease against which we have a weapon nearly perfect, yet in the District of Columbia in 1937 there were 539 cases reported and 14 fatalities, each of which should have been prevented. Here is a disease, the early diagnosis of which, together with Shick-testing of all contacts and administering to all Shick-positive contacts an adequate amount of antitoxin should yield excellent results, provides a method of finding the exact status of all exposed persons and protecting them. Before releasing the patient and any persons in contact with him it is wise to make cultures with the object of checking them as possible carriers of the disease. The usual procedure is to maintain quarantine until 2 cultures taken 24 hours apart are negative for the bacilli or if present are not virulent. Thus, it seems a fair statement to make that we have almost complete control of this disease which can be so disastrous in its effects. Testing and immunization is the answer to this problem and no one should go without full protection against this disease. Possibly the responsibility for diphtheria not being eradicated rests primarily with lack of lay coöperation.

Surely it is not asking too much to expect every infant to be under the care of a physician either as a private patient, in a welfare clinic or in a hospital clinic, and such a physician should immunize every infant at the age of 6 months. The material generally used at this time is alum-precipitated toxoid, which is given in 1 dose of 0.5 cc. subcutaneously, usually in the deltoid region. This material yields a high degree of protection, Jones[3] stating that alum toxoid is the most effective material, with plain toxoid next and toxin-antitoxin least effective. In his hands the three methods have yielded immunity of about the same duration. The largest local experience with alum toxoid has been in the hands of the Child Welfare Service, where it has been used for some 3 years, and within that limit the results are the same. How long it will continue effective is a matter that cannot be answered at this time.

After administering the dose of alum toxoid a Shick test should be given 3 to 6 months later to insure complete protection; this check-up is most important. The test is done on the flexor surface of the forearm, a tuberculin syringe and needle being used, the injection of exactly one fiftieth minimum lethal dose of toxin in 0.1 cc. normal saline being given and the test read in 5 to 7 days. If this technic is adhered to, it is not necessary to use a control. If the infant is negative to the Shick test he should be checked again about 3 years later and again on entrance to school. If for one reason or another he comes for immunization in the pre-school age, it is wise to give the Shick test first, since he may have natural immunity; it being the accepted thing, according to Park, for susceptibility to reach its peak between 6 months and 2 years of age, and from that age on a larger and larger percentage have acquired immunity and may not need toxoid. If the child is still older, 8 or more years, it is recommended that he be immunized with toxin-antitoxin given in 3 doses of 1 cc. each at weekly intervals, since in older children and adults severe local reactions to either form of toxoid may occur. It is necessary, of course, to permanently immunize those contacts who were temporarily protected by an adequate dose of antitoxin; the method chosen for the purpose should be toxoid without regard for age, since sensitization to the horse serum in both antitoxin and toxin-antitoxin may be present.

Measles

This disease is mainly confined to childhood and is probably the most contagious of all, since there is very little natural immunity, which is confined, perhaps, to the first 6 months of life and then rapidly lost. It is this feature which most likely accounts for the occurrence of so-called measles' years, when there are sufficient children in the community who have not had the disease. Measles leads all other diagnoses except venereal disease in the 1937 Health Department figures, with 2,118 cases, resulting in 13 deaths. This disease has been the subject of many articles in the current literature, especially from the standpoint of immunizing procedures. The time-honored general measures, isolation, etc., have not resulted in stemming the progress of an epidemic, and the reasons for this are quite evident. A mother does not feel it necessary to keep her child home from school when he has a "runny" nose, the thought of measles is probably the furthest from her mind. She is as deeply shocked as anyone could be when she finds in the next few days that he has a fever and then develops the classical picture of measles. It is during the coryza that he has inadvertently spread the virus to all his friends and they in turn to all theirs. It is with years and years of this experience that other and more effective means of control are being sought.

No method of active immunization has stood the test of time, and today we are no further along that road. But to the individual the outlook is not quite so grim as before, since it is now in our power to either prevent the disease or by modification to rob it of much of its terror. In either case the same substances are used, namely, convalescent serum, serum of immune adults, or placental extract. The sera may be employed, or the corresponding whole bloods, fresh or citrated. Serum should be obtained from patients between the seventh and sixtieth days of convalescence. To prevent the development of measles a dose of 5 to 15 cc. of convalescent serum is given intramuscularly not later than 5 days after exposure. The dose of whole blood is roughly double. The amount of immune globulin given for this purpose is 2 cc. Complete protection should be given children under 2 years of age or those in poor condition, especially those who have recently had or still have tuberculosis. It must be borne in mind that this passive immunity is of short duration. As a general rule, it is much better to use either a smaller dose or give it further along in the incubation period and secure modification of the disease, and at the same time permit the development of a lasting immunity. Dr. Van Ingen, my ex-chief, summed up this point very well when he stated that the complete prevention of such a common disease amounted to postponing it until adult life, when greater inconvenience and loss to the individual would result. The choice of agent to be employed is perhaps best put as Hyland and Anderson[4] express it: Until active immunization can be produced, convalescent serum will remain by far the best preventive measure against measles, both in effectiveness and in practicability.

POLIOMYELITIS

This disease has a relatively low degree of communicability. It has recently been the subject of much interest, scientific and popular, but it still has to meet with very effective means of control. The absence of any test which will point out the susceptible persons remains a large hurdle to any plan for the institution of active immunity. Many plans have been advanced, such as the use of the Kolmer and Park-Brodie vaccines, the use of adult blood and the use of convalescent serum, to establish immunity either as a general measure or in the presence of an epidemic. But at the present time there is no practical method which in the hands of the practicing physician has achieved success.

SCARLET FEVER

Scarlet fever is essentially a disease of children but their susceptibility to it is much less than to measles. In the District of Columbia in 1937 there were 548 cases with 5 deaths reported. Following the isolation of a streptococcus from scarlet fever patients, the Dicks developed their method of skin-testing to discover those susceptible. This test is carried out in a manner similar to the Shick test but is not nearly as satisfactory. It has been established that there are at least four groups of hemolytic streptococci associated with scarlet fever. Therefore, as Wadsworth[5] has stated, the diagnostic value of the intracutaneous test which was developed by the Dicks is limited to a determination of the susceptibility to the particular toxins used in the test.

Thus, with such authoritative question raised concerning the specificity of the Dick test as a diagnostic measure, we may or may not be able to state just what the status of a given patient threatened with the disease actually is. The Dicks recommended active immunization of all positive reactors with 120,000 skin test doses of the Dick scarlet fever toxin, which was to change a positive reaction to a negative one, but with the whole question in doubt it is clearly not established on theoretical grounds that such active immunization is worth the while. When one adds to these objections the experience of Peterman[6] in the Milwaukee epidemic of 1934–1935, who states, "The patients (seen) in the hospitals and (my) private patients had less discomfort from scarlet fever than they would have experienced with 5 injections of Dick toxin and 2 skin tests," it appears that active immunization at this time is not practical. Passive immunity may be brought about by the use of convalescent serum. Hyland and Anderson[7] suggest a dose of 10 cc. of convalescent serum for children under 10 years and a dose of 20 cc. for those over this age, the serum to be collected from patients who are 21 to 90 days' convalescent. This is said to protect an individual for about 10 to 14 days, and in the presence of an epidemic it may be necessary to repeat the injection.

SMALLPOX

This communicable disease is not a feature of childhood but is considered here because its prevention properly should be considered a problem of pediatrists. During 1937 there were no cases reported to the Health Department which leads one to the conclusion that prevention of this disease has been well handled. However, Collins,[8] reporting a survey of 9,000 families in urban and rural communities, found that only 10 to 20 per cent of the children had been vaccinated before entering school, and since it is well established that a completely vaccinated population is the soundest protection against the disease, it may be well to consider it. The most common method used to vaccinate is the multiple pressure method, but a good take is the main objective. The initial vaccination should be done during the first year, for the reason that all reactions encountered are milder, probably due to a carryover of maternal immunity. It is recommended that vaccination be repeated 5 years after the initial one and again should an epidemic occur.

On the question of revaccination and in particular when it should be done, there is some difference of opinion. In the Swedish Army[9] in 750,000 vaccinations the reactions were with few exceptions those of the hastened or immune type, which serves to question the impression that of persons vaccinated in childhood 50 to 90 per cent lose their immunity, since this study indicates that after a lapse of 20 years relative immunity is still present. The best procedure, vaccination in infancy, is difficult to "sell" parents at the present time. I have encountered more opposition to early smallpox vaccination in the clinic than to any measure recommended. A program of lay education might serve to impress parents with the wisdom of early vaccination.

TUBERCULOSIS

The problem of preventing the dissemination of tuberculosis is a great one. It is possible to isolate or segregate only a few of the active, open cases, consequently the prevention of the spread of the disease has been only relatively successful. The danger of contamination in infancy and childhood is especially great. As a step in the direction of finding those open cases who may spread the bacilli to children, extensive use of the various tuberculin tests and X-ray films should be employed. By these two methods one should be able to find and attempt an educational program of those persons who may otherwise be the means of spreading the disease.

If some method could be found to immunize infants and children before they had acquired a primary infection, it would be a great step ahead. For that reason the inoculation of children with the BCG. vaccine as devised by Calmette and Guérin was received with the highest expectation. Some investigators are very much impressed with its record, in particular as given to infants; on the other hand, equally competent observers are of the opinion that it is not only without value but may actually cause harm. The preponderant opinion at this time, particularly in this country, appears to be opposed to the use of this vaccine as a public health measure. If we may accept the opinion of Beaven[10] there are indeed grounds for optimism; as a result of the study of 4,982 children between 1926 and 1934 he concluded that tuberculosis among children was decreasing rapidly and that if this decline continues tuberculosis will soon be a rare disease.

WHOOPING COUGH

This disease is mainly confined to children and is characterized by a high degree of communicability. In the District of Columbia 561 cases with 17 deaths were reported in 1937. According to these statistics this disease was the cause of more deaths than any one of the diseases discussed in this paper. It is common knowledge that it causes more trouble to the family and the attending physician than any of the other contagious diseases, since when well established there is essentially nothing that can be done. The worst effects of the disease are felt in the first year, when the majority of deaths and complications occur.

Orthodox methods of control are generally conceded to be almost valueless, and the aim should be a population 100 per cent protected for at least the first 3 or 4 years of life, since this is the time when positive methods of control would yield maximum results. Many efforts have been expended to attain this objective. A step of great help in this direction would be the development of a simple test to determine the susceptibles and demonstrate effective immunity after the given procedure had been completed. Suggestions along this line have been made, notably a skin test using the pertussis bacillus, and complement fixation and agglutination tests on the blood. So far these tests have not yielded much in the way of practical results. Various attempts have been made to develop a vaccine which might be used as a routine in the same sense that diphtheria and smallpox immunizations are done.

Until the vaccine developed by Sauer was available nothing had been satisfactory. The Sauer vaccine is given once a week for 3 weeks, the material being given by subcutaneous injection in each arm, each week, and no two injections in the same spot. The first dose consists of 1 cc. in each arm or interscapular space, the second dose is increased to 1.50 cc. and given in the same way, and the third dose is the same as the second; the object is to administer 80 billion bacteria in the course. Sauer[11] advises the use of his vaccine in the last half of the first year, but in patients over 3 years of age the dose should be increased and given as 2, 4, and 4 cc. in the manner described. It appears that the majority of individuals are securing satisfactory results with this material and this technic, but it is not universally accepted, and until the development of a satisfactory test for proof of efficiency of the vaccine, it will be necessary to await clinical test, i.e., exposure of enough children to the disease after immunization to demonstrate its success in the same way that many years of observation alone justify the use of smallpox vaccination. The objections raised to the Sauer vaccine seem to consist mainly of strength of the vaccine or the total dose given; thus, in Denmark recent investigators report the use of a vaccine giving 140 billions instead of Sauer's 80 billions. Convalescent serum[12] is being tried as a protective measure, but because of the length of the incubation period it will probably never be as successful as in scarlet fever prevention.

CONCLUSIONS

1. A program of prevention of the common communicable diseases is outlined, consisting of lay education, accurate diagnosis and case-finding.

2. Methods of securing immunity are offered and the newer developments outlined.

3. An attitude of caution concerning the newer methods is recommended, since the last court of appeal is exposure to the disease and protection after such exposure.

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SADDLE THROMBUS AT THE BIFURCATION OF THE AORTA*

REPORT OF A CASE TREATED CONSERVATIVELY

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Sudden pain in an extremity followed by coldness, cyanosis and absence of arterial pulsation immediately suggests sudden arrest of arterial circulation. Embolectomy from any peripheral artery is more often successful if performed within 24 hours of the occurrence of the occlusion.

Operative removal was successful in 53 per cent of 98 cases recently reported. It has recently been demonstrated that marked vascular spasm is always associated with a sudden arterial occlusion and that this vascular spasm is diminished by the administration of papaverine in large doses. The pain is thereby diminished and the blood supply of the part affected improved. The exploration of the aorta at its bifurcation is a major operative procedure and especially so if the patient is a poor operative risk.

Dr. H. H. Kerr[1] has suggested that a saddle thrombus at the aortic bifurcation might be attacked by opening the femoral artery in Scarpa's triangle under local anesthesia and then passing a vaselinized soft rubber tube attached to a suction apparatus up the artery a short distance at a time and thus the thrombus be removed by suction. This would seem an excellent procedure, but as yet has not been successfully performed.

Report of Case

W. B., a carpenter, white, aged 45 years, was seen by me, May 19, 1936. His chief complaint was weakness of the legs, more marked on the right, and unsteadiness in walking. The past history was relatively unimportant. His wife and 3 children were living and well. He had had no serious illness and had not sustained any injury of consequence. About 2 years previously, in 1934, he had noticed weakness in his legs and unsteadiness in walking and these symptoms had gradually become more marked. There had been no bladder or rectal symptoms.

The patient was found to be well developed and well nourished. The heart and lungs were negative. The blood pressure was 160 systolic and 95 diastolic. There was a marked dryness and scaliness of the skin of the entire body which had long been present (ichthyosis). The right pupil was slightly irregular, but both pupils reacted to light and accommodation; otherwise, the cranial nerves were negative. The reflexes were increased on both sides and the Mayer sign was positive. Abdominal reflexes were not obtained. There was some atrophy of the upper portions of the lower extremities and flabbiness and definite weakness, more marked on the right. The patellar reflexes were exaggerated. There was sustained ankle clonus on the left, but not on the right. Babinski's sign was positive bilaterally. There was impairment of vibratory sensibility in both lower limbs, more marked in the right. Romberg's sign was strongly positive. Urinalysis was negative. Blood Wassermann and provocative blood Wassermann tests were negative. The spinal fluid was clear, of 16 mm. Hg. pressure, with 2 plus globulin, 2 plus Wassermann test, 3 plus Kahn test, and a paretic colloidal gold curve; the Queckenstedt test was normal.

The patient was given antiluetic treatment consisting of neoarsphenamine, tryparsamide and bismuth. In October, fever therapy by means of malaria was given by Dr. Walter Freeman. He was allowed to have 8 chills before the malaria was terminated by quinine. For several days previous to the eighth chill, he had been able to take very little food. He had been vomiting and was rather drowsy; the pulse rate ranged between 96 to 104 per minute, and the blood pressure was as low as 90/76 at times. The heart sounds were rather weak. There was no edema of the ankles. There was rather marked prostration, considerable enlargement of the liver, and abdominal distention with gas.

Eight days following the last chill the patient suddenly developed very severe abdominal pains with nausea and vomiting, followed by marked cyanosis and coldness of both lower extremities. A pulsation could not be felt in any of the arteries of either leg. Femoral pulsations were absent on both sides. A diagnosis of saddle thrombosis at the bifurcation of the aorta was made.

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He was treated by large doses of morphine, whiskey in large amounts, and heat to the lower extremities. About 48 hours later, in Garfield Memorial Hospital, a Pavaex boot was placed on each leg. Under the supervision of Dr. Hildenbrand the Pavaex treatment was continued, first continuously, later intermittently for 9 days. During this time the patient was desperately ill and for several days it seemed very doubtful that he would survive. Large amounts of morphine and sedatives were required for relief of pain. He was irrational much of the time, the temperature ranged from 99°F. to 101°F., and the pulse rate from 90 to 120 per minute. Pulsations could not be felt in any vessel of either leg at any time.

By November 3 there was gangrene of the anterior portion of the left foot with a line of demarcation about the midtarsal joint. The color and temperature of the remainder of the left leg and of the right foot and leg were fairly good. He was not having much pain, and his general condition was fair. Under a gas anesthetic the left leg was amputated about 3 inches below the knee. The postoperative convalescence while slow was satisfactory. By the end of 3 weeks the wound was healed except for a small sinus which was completely healed 3 months postoperatively.

It is now 18 months since the catastrophe, and the patient's general condition is good. He gets about some with an artificial leg and crutches, and could do much better except that he is ataxic because of the central nervous system involvement. The circulation in the left leg seems adequate. In the right leg there is a slight discoloration and decreased temperature of the foot, indicating that the circulation is fair but not entirely adequate.

Saddle thrombosis at the bifurcation of the aorta is infrequently encountered, occurring usually in association with cardiac valvular lesions. The mortality rate is very high, and in those cases that have survived bilateral amputation high on the thigh has usually been necessary. Treatment has been symptomatic and supportive. In a few cases, surgical removal of the thrombus has been attempted. This case is unusual in that: (1) Complete recovery took place; (2) one leg was saved; (3) amputation was successfully carried out on the other leg below the knee and an excellent stump obtained; (4) the treatment was conservative rather than radical; and (5) the successful outcome was apparently, in a large measure, due to the Pavaex treatment which rapidly increased the collateral circulation to the point that sufficient blood was afforded to maintain the life of the tissues.

It is suggested that this method of treatment should be given careful consideration in the management of any similar case.

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ABSTRACT OF PAPER READ BEFORE THE SOCIETY

"An Analysis of the Value of Therapeutic Agents in the Treatment of Intestinal Obstruction,"* **Owen H. Wangensteen**, M.D., Minneapolis, Minn.

The results of operative treatment of acute intestinal obstruction have not been brilliant. As a matter of fact, surgeons have had no occasion to feel proud of them. Successes in the treatment of mechanical obstruction of the small intestine of simple nature (non-strangulating) by means of continuous suction applied to an inlying duodenal tube has served to emphasize the necessity of an aseptic decompression. Some of the mortality of acute intestinal obstruction has not been the result of the disease but of the treatment employed.

Non-operative decompression by suction has a wide range of usefulness in many types of intestinal distention. Adhesive obstruction of the small intestine, among mechanical agents which block the continuity of the bowel, is the chief indication for the employment of suction. Almost invariably incomplete obstructions of a non-strangulating character can be satisfactorily decompressed by suction. Just as the continuity of the obstructed intestinal canal may be restored automatically after enterostomy, so similarly the patient decompressed by suction applied to an inlying duodenal tube may have no further difficulty. Strangulating obstructions and occlusions of the colon with great distention must always be submitted to early operation. The rôle of suction in the treatment of bowel obstruction is outlined; indications and contraindications to its use are defined, and the technic of its employment is described. The value of saline solution and transfusion of blood in obstruction is discussed as well as the choice of operative procedure.

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* Presented, April 27, 1938.

RAYNAUD'S DISEASE*

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Recent studies have done much to clarify our conception of peripheral vascular diseases. However, there is still much uncertainty in the minds of many physicians concerning the diagnosis and treatment of these conditions. Excluding arteriosclerosis and thromboangiitis obliterans, Raynaud's disease is the most frequent cause of an inadequate circulation in the extremities[1]. Maurice Raynaud[2] of Paris wrote his paper "The Local Asphyxia and the Symmetrical Gangrene of the Extremities" in 1862. This disease has since been known by his name, and his four diagnostic criteria are still used.

Definition. The disease presents itself as a symmetrical vasospastic phenomenon in which there is pallor followed by cyanosis, in which it is difficult to induce recovery and in which the patients complain of numbness and aching pains during stages of pallor. The pallor is referred to as local syncope and represents vascular spasm. The cyanosis is referred to as local asphyxia and is attributed to contraction of the arterioles with dilatation of the capillaries and venules.

Etiology. There is much disagreement concerning a specific cause of Raynaud's disease. Formerly it was thought to be due entirely to vasomotor over-activity in the form of spasmotic vasoconstriction. Lewis[3] claims that the attacks of cyanosis and pallor are brought about principally by a "local fault" in the walls of the digital arteries.

Incidence. Raynaud's disease is rare in men. Of the vasospastic disorders affecting the peripheral circulation, of which Raynaud's disease represents the most typical form, the distribution by sex is the reverse of that found in organic disease of the peripheral arteries. This condition is most common among young, asthenic women and among women of middle life who are chronically fatigued and subjected to severe mental strain. In a report by Allen and Brown[4] of the Mayo Clinic, 7 cases, or 5 per cent, of 155 cases diagnosed as Raynaud's disease were found in males. In our clinic at Garfield Memorial Hospital during the past 3 years we have seen 8 cases of Raynaud's disease, and 2, or 25 per cent, were in males.

Diagnosis. The criteria for the diagnosis of Raynaud's disease are as follows: (1) Episodes of change in color of the vasospastic type, excited by cold or emotion,[2] (2) bilaterality,[2] (3) presence of normal pulsations in the palpable arteries,[2] (4) absence of gangrene, or its limitation to minimal grades of cutaneous gangrene,[2] (5) absence of any primary disease which might be causal, such as cervical rib or organic disease of the nervous system,[4] (6) symptoms of 2 years' or more duration,[4] (7) exclusion of obliterative vascular disease not only by the absence of gangrene but also by the determination of the normal arterial pulsations by oscillometric readings and by the demonstration of normal reflex temperature variations in the affected limbs with the thermocouple,[5] and (8) the characteristic changes in the capillaries of the nailfold.[5]

Prognosis and Course. The prognosis of Raynaud's disease is subject to wide variations. The mild forms often do not change in years, and if there is no change in 2 or 3 years the prognosis is good. The common, serious type gradually progresses to chronic cyanosis of the extremities, in which case recovery is less complete and the extremity is more easily affected by the environment. If small, dry ulcers of the skin of the digits appear, the prognosis is not good; the condition usually persists but does not progress to the point of serious gangrene, yet it constitutes a real disability to the patient. No patient has ever died because of the disease.

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* Read at the Annual Scientific Assembly of the Society, May 5, 1938.

Treatment. The treatment is divided into two methods, medical and surgical. The first method is to remove if possible the exciting factors, and the second method is to block or produce interference in the vasomotor paths which supply the affected areas. In many cases considerable relief is obtained by protection from cold, changing certain friends, the use of vasodilator drugs and passive vascular exercises, and cessation of smoking. The last should be done in all vascular diseases and particularly in the peripheral vascular diseases which are noticeably affected. I predict in 10 to 15 years a definite crusade against tobacco by the medical profession.

On the whole, the medical treatment of Raynaud's disease has been most disappointing. If such treatment fails in the individual case, then the operative procedure to interrupt the vasoconstrictor impulses should be done.[6]

ILLUSTRATIVE CASES

The following 2 cases, one male and the other female, of peripheral vascular disturbance are presented which conform to the criteria for Raynaud's disease. One was studied on the medical service at Garfield Memorial Hospital and the other was referred from the Eastern Shore of Maryland.

Case 1: C. J., a man, aged 40 years, began to have symptoms 10 years before his first visit, October 30, 1937. When his hands were exposed to cold weather the fingers became numb and white, then blue. The numbness would abate when the patient was in a warm room for 30 minutes and then they would get very red and have prickly sensations until they resumed normal appearance. The pulsations were present in both radials. The thermocouple readings revealed evidence of a spastic or vasomotor disease. The oscillometric readings were normal. The blood Wassermann test was negative. X-ray films of the hands showed a destruction of the distal heads of the distal phalanges of the first, second, third, and fifth fingers of both hands, both ring fingers having escaped damage. He was given treatment with reference to removing causative factors and passive vascular exercises (Pavaex). He had a daily treatment for a month, then went back to his home, stayed 2 months and came back for another month. He had cutaneous gangrene of the right index finger before the treatments were instituted and was also unable to hold a knife or fork except in the entire hand. Both of these conditions have improved and he is definitely better.

Case 2: F. B., a woman, aged 26 years, began to have symptoms $1\frac{1}{2}$ years before her visit and hospitalization at Garfield Memorial Hospital, October 18, 1937. She experienced the sensation of coldness in both hands accompanied by color changes whenever she was exposed to cold or became excited. She had an associated arthritis, and the tonsils had been removed about a year before. She had noticed reactions in her hands more since the attack of arthritis, which involved only her hands. On the day previous to admission she developed a sudden swelling of her face accompanied by redness and itching, and both hands became blanched. Warmth relieved these attacks. Pulsations were present in both radial arteries. The thermocouple readings revealed evidence of a spastic or vasomotor disease. The oscillometric readings were normal. The blood Wassermann test was negative. X-ray films of both hands were negative. This patient has been advised with reference to removing causative factors, but no other treatment had been given. She shows very little if any improvement.

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An Experimental Study of the Behavior of Sulfanilamide. .... Some time ago this investigation was undertaken in order to determine the efficacy of sulfanilamide therapy on gonorrhea of the female. The treatment of gynecologic and obstetric patients presented certain problems not previously encountered in the administration of the drug, namely: (1) The elimination of the drug in certain body fluids: cervical secretion, menstrual fluid, and human milk. (2) Its transmission to and its effect on the unborn fetus. This paper is a preliminary report of some of the observations made in the study of these problems. . . .

Conclusions. 1. Sulfanilamide has been found in the cervical secretion and menstrual fluid, but in amounts so small that its bactericidal action on the gonococcus is questionable. The criterion of cure of gonorrhea should be based, if possible, on cultural studies as well as smears.

2. Sulfanilamide is excreted in breast milk, both free and as the acetyl derivative. The milk level is considerably above the blood level, and the drug is excreted in the milk for some time after the blood level is negligibly low. With doses of 2 and 4 Gm. (30 and 60 grains) the total amount excreted was never greater than 1.5 per cent of the amount of the drug administered. It was still being excreted in small amounts seventy-two hours after medication had been discontinued.

3. Sulfanilamide is transmitted to the placenta and fetus of the rabbit and is associated with a marked increase in the mortality of the young. Sulfanilamide has also been found in the placenta and cord blood of the human being.

4. Until more is known of the tolerance of the human fetus and of the newborn for sulfanilamide, the drug should be administered only with the utmost caution during pregnancy and the period of lactation. If administered to the mother, breast feeding should be discontinued during the period that sulfanilamide is excreted in the milk.

Abstract of paper by Fred L. Adair, M.D., H. Close Hesseltine, M.D., and Lucile R. Hac, Ph.D., Chicago, *Journal, American Medical Association,* August 27, 1938, p. 766.

HOPEFUL TRENDS IN THE MANAGEMENT OF DEAFNESS*

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No greater satisfaction can be enjoyed in the practice of medicine than that which results from visible progress in a given field. As far as the problem of deafness is concerned, the psychological aspects of the unhappy individual with such a handicap are hardly greater in importance than the broader aspects of the individual's economic burden to society. It is therefore exceedingly gratifying as we review the recent developments in regard to deafness to find that progress is being made in several directions. There are three factors to be considered in this discussion, namely, education, treatment, and rehabilitation. The importance of education cannot be too strongly emphasized; let us remember that there are 3,000,000 hard of hearing children, and that at least 300,000 of these have losses so severe that they are handicapped in their schooling. It is safe to assume that at least an equal number of adults are hard of hearing, without giving consideration to the vast number of aged people who are handicapped by a physiological loss of high tone perception. The magnitude of the problem, with six or seven million persons suffering from deafness of varying degrees is thus apparent. In recent years efforts have been made by such lay organizations as the American Society for the Hard of Hearing to propagandize the importance of recognizing early the presence of hearing loss. It can be said that these efforts, coupled with those of individual pioneers in otology, such as Shambaugh, Newhart and Macfarlan are bearing fruit. There is apparent a very definite attitude of coöperation from the public; children are brought in for examination as soon as a hearing defect is suspected. Parent-Teachers Associations are eager to have speakers from the medical profession address them on the various phases of child health. The radio is being more freely used by the medical profession for the purpose of ethical scientific propaganda. The cumulative effect of all these activities is developing a health consciousness among the people which in years to come is bound to have a decided effect upon the morbidity of such afflictions as deafness. The organizations and individuals who are crusading in this field command the respect and coöperation of all. A continued campaign of education is a potent factor in improving perceptibly the prognosis in deafness.

Improvements in the diagnosis and treatment of deafness are keeping pace with the excellent strides obtained by education. The earlier recognition of curable deafness is due in great measure to the fact that patients seek advice earlier than they used to. But in addition to this it must be admitted that on the whole otologists are better trained and equipped to diagnose early and treat successfully that large proportion of cases of deafness for which something can be done. I refer in particular to the catarrhal deafness in children and adults and to those insidious cases of high tone loss so common in children with unsuspected foci of infection. The periodic health examinations conducted in schools, the campaigns among children of preschool age such as we have in this City during the month of May, the continued efforts of physicians along the lines of prevention in private practice or in the clinics do much to reduce the incidence of deafness. Although the audiometer is still to be perfected and its use is limited by its high cost, it represents unquestionably the most accurate means of determining hearing loss at the present time. It does not in any way displace the tuning forks and older tests in the differential diagnosis of deafness, but it does give a more accurate, constant finding, which is easily obtained and charted in a short period of time. Its use for testing school children is particularly valuable.

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* Read at the Annual Scientific Assembly of the Society, May 4, 1938.

We must accept as a fact, therefore, that means of diagnosis have definitely been improved in the recent past. Are we making any progress in the treatment of deafness? Certain types of deafness have defied all forms of treatment in the past. Not enough is known about the etiology and pathology of otosclerosis, for instance, to allow the formulation of a rational treatment. Periodically articles appear in the literature with the description of a new surgical procedure, the injection of various substances in the tympanic cavity, etc., but so far there is no evidence that much progress has been made. Continued research into the endocrine dyscrasias and their relation to the incidence of otosclerosis may in future years hold the answer to this perplexing problem.

Much of the catarrhal deafness can be prevented by the early conservative treatment of otitis media. Early myringotomy with supportive medical treatment is invaluable. Particularly happy are the results obtained from the use of sulfanilamide in otitis media. The fact that the incidence of mastoiditis, for instance, has been so markedly reduced during the past year, can to a great extent be due to the mildness of the winter and variations in bacterial virulence. But all of us have had cases in which the early use of sulfanilamide has produced such spectacular results that the use of the drug must be regarded with considerable optimism. One phase of sulfanilamide therapy remains to be evaluated during the next few years. I refer to the possible toxic effect of the drug upon the eighth nerve, similar to the action of such drugs as quinine and salicylates.

Inflation of the eustachian tube and massage of the ear drum continues to be a valuable treatment in catarrhal deafness, in spite of the disappointing results sometimes obtained. Some plastic processes with adhesions of the drumhead to the inner wall of the middle ear and stenosis of the eustachian tube defy all forms of treatment. Bouginage of the eustachian tube is still advocated by some otologists; results with this treatment have been disappointing to many of us, however, and it is safe to say that at least some cases are aggravated by its use. At Episcopal Eye, Ear and Throat Hospital during the last 2 years we have been using the Elliot heat machine in an effort to evaluate its usefulness in the treatment of deafness. Although our eventual analysis may fail to show any spectacular results as compared to older methods, it must be said that already we are impressed with the results obtained in some cases. The best results have been obtained in the early simple catarrhal cases. However, the more advanced catarrhal cases, and even some of the cases of mild nerve deafness have shown encouraging improvement. Recent claims that X-ray therapy is of value in catarrhal deafness should not be arbitrarily rejected without allowing for further proof of the value of this therapy. It is quite conceivable that X-ray therapy may so decrease the amount of lymphoid tissue in the nasopharynx as to actually be beneficial when this tissue is a factor in the etiology of deafness. Next to otitis media, a chronic nasopharyngitis is probably the most important factor in the etiology of catarrhal deafness. Every effort must be made therefore to clear up this focus. The campaign now in progress against syphilis will no doubt be successful in decreasing the incidence of syphilitic nerve deafness. The recognition of the disease in sudden deafness must be coupled with vigorous antiluetic treatment to obtain best results. The incidence of deafness of luetic origin has unquestionably declined, and recent developments point to the continuation of this trend.

For that unfortunate group of patients with severe deafness, for which nothing can be done in the way of treatment, two avenues of rehabilitation have been opened that will bring happiness to many. I refer to the invaluable help obtained by lip reading and by the use of artificial hearing aids. To learn to hear with the eyes is a painstaking procedure which requires the utmost patience of teacher and pupil. For its excellent work in this field the American Society for the Hard of Hearing must again be commended. Many teachers give of their time willingly in the free clinics of such institutions as Episcopal Eye, Ear and Throat Hospital.

Their only reward is the satisfaction obtained from helping those unfortunates who like themselves live in a soundless world. It behooves the otologist to recommend lip reading to all cases of progressive deafness while there is still some residual hearing.

Recent years have seen the development of artificial hearing aids brought to such a high degree of technical perfection that considerable encouragement can be derived from this source. Bone and air conduction instruments are manufactured with or without amplification. Cases of catarrhal deafness or otosclerosis are best fitted with the bone conduction instruments, while cases of perception deafness are helped by the air conduction instruments. High pressure salesmanship is an unfortunate attitude of a few concerns. On the whole, however, I have found that the majority of agents are willing to coöperate with the otologist. It is our duty, therefore, to protect our patients by recommending the type of instrument most suitable to their case, much in the manner of the ophthalmologist in the prescription of glasses.

An important obstacle to the more common use of hearing aids is the relative high cost of the instrument. I firmly believe that this can be overcome by the continued coöperation of physicians and the ethical concerns that manufacture them. In this way a large group of deaf people with limited incomes will be able to buy what now appears to be a luxury that only a few can afford.

In conclusion, I should like to leave you with this thought; that the physician practicing otology, as well as his colleague in other specialties, must look beyond his achievements in diagnosis and treatment into the broad horizon of prevention and rehabilitation. Our patients' illnesses should not only be our problem when we can cure them, but their social welfare must be our concern when our treatment fails.

Therapeutic Effectiveness and Toxicity of Sulfanilamide and Several Related Compounds: Further Clinical Observations. . . . . The toxic manifestations which appear in the course of treatment with sulfanilamide seem to occur on a basis of sensitivity and idiosyncrasy. The latter, while apparently rare, is serious and the former, while more common, is usually mild but may become serious if ignored. Most individuals seem to exhibit some sensitivity when the initial doses of the drug are large or when the total administered amount is considerable. The toxic manifestations which occur with such doses are usually mild and consist largely of malaise, anorexia, nausea, vertigo and tinnitus. With continued use of the drug, these symptoms may be followed by cyanosis attributable to methemoglobinemia, sulfhemoglobinemia or the presence of an unidentified substance in the blood; abdominal cramps, diarrhea, cutaneous lesions, fever, paresthesias and so on also may supervene. When these mild to moderate toxic symptoms occur we believe they should be considered seriously, for they may herald the advent of more serious complications such as leukopenia, granulocytopenia, anemia of acute type or associated with crisis, jaundice and a state resembling shock. Persistence and increase of these mild to moderate symptoms, in spite of decrease in dosage of the drug, constitute ample reasons for discontinuance of its administration, particularly if the preparation is used as a more or less optional measure. If after several days a further attempt is made to use the drug and these symptoms again arise and tend to persist, we believe that administration should be permanently discontinued and some other form of treatment used. We also believe that the blood offers an index of toxicity even more important than the symptoms and that decrease in the hemoglobin content or in the erythrocyte count or leukocyte count must be taken as evidence of a dangerous complication which necessitates immediate discontinuance of this form of therapy.

The likelihood of occurrence of the foregoing toxic manifestations is increased in the presence of existing marked anemia, leukopenia, and renal and hepatic damage. The presence of any of these conditions, therefore, constitutes a contraindication to the use of sulfanilamide. If, under certain circumstances, it seems advisable to use the drug in spite of the presence of contraindications, it must be given with caution. We have seen no fatalities from blood dyscrasia following use of this preparation. Jaundice following the use of sulfanilamide has been noted in two cases in which death occurred and in which it is possible that hepatic damage existed prior to the beginning of the treatment. We have felt, as a result of this experience, that sulfanilamide may cause hepatic damage which already exists to progress to a stage from which regeneration is impossible. In contrast to this complication are the mild attacks of jaundice which occasionally are seen and which usually subside rapidly when use of the drug is discontinued and intake of fluids is forced. These two measures are of extreme importance in combating toxemia from sulfanilamide and may be reinforced by the use of transfusions of blood or oral administration of bone marrow when disturbances in the blood occur.

Fortified by a knowledge of the nature of the toxic manifestations of sulfanilamide, we believe that constant observation of the patient under treatment will allow detection of these abnormal reactions when they are still amenable to appropriate measures and will prevent the occurrence of fatalities save in rare instances.. . .

We have treated with sulfanilamide, neoprontosil or di-methyl-disulfanilamide twelve patients who had chronic ulcerative colitis. In each case the diagnosis was confirmed by proctoscopic examination. In eleven cases roentgenograms of the colon were made and in eight of these there was evidence of chronic ulcerative colitis above the rectosigmoid region. In nine cases the chronic ulcerative colitis was uncomplicated by other disease and these have been grouped together. . . .

In each of these nine cases improvement was definite. In six of these nine cases . . . improvement was so striking and so prompt as to leave little doubt as to the value of the drug used. About the fourth day after treatment had been started the patients noted marked reduction in the number of stools and in the amount of bleeding, and this improvement continued until the patient was having one or two formed stools daily without gross blood. There was a tendency to slight recurrence of symptoms when administration of the drugs was discontinued, but this again was promptly controlled as soon as treatment was resumed. Gradually the interval between courses of treatment was lengthened without resulting recurrence of symptoms, and subsequent proctoscopic examination of four patients has given no evidence of chronic ulcerative colitis. . . .

Summary. We have mentioned the use of sulfanilamide, di-methyl-di-sulfanilamide and neoprontosil by oral administration in the treatment of various infections. Sulfanilamide, although apparently possessing therapeutic advantages over the latter two preparations, nevertheless appears to have more of a tendency to produce toxic manifestations. Di-methyl-di-sulfanilamide, because of a tendency to produce peripheral neuritis, is contraindicated for general use at this time. Neoprontosil administered orally, while apparently less effective therapeutically than sulfanilamide, seems to be less likely to produce toxic manifestations and therefore is of value in some instances wherein sulfanilamide cannot be satisfactorily given. Certain cases of chronic ulcerative colitis seem to offer a favorable field for the use of neoprontosil or the cautious administration of sulfanilamide.

Abstract of article by EDWARD G. BANNICK, M.D., Seattle, Wash., ALEX E. BROWN, M.D., Rochester, Minn., and FRANK P. FOSTER, M.D., Montclair, N. J., *Journal, American Medical Association*, August 27, 1938, p. 770.

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THE PRESIDENT'S MESSAGE

THE DOCTOR AS A BUSINESS MAN

"The Doctor is no business man"—this gentle imputation, by lack of denial, has been tacitly accepted by doctors in vain conceit as a sort of compliment, and it is doubtless so intended. Those who make such a statement have some right and reason in doing so, because in his commerce with patients he rarely brings to bear the methods which in their minds are characteristic of "good business." There are many reasons for this. Aside from such altruism as he may feel, as a result of inherent human disposition, and that further develops as a result of experience with his fellowman in misery, the doctor is strongly dominated by several motives—the artist's desire for a skillful, adequate performance, the sanction of his peers, and last but greatest of all, the approbation, not only of patients but his fellowman in general. Such a status is valued so highly that the doctor is often willing and eager to forego considerable material gain for the enjoyment of such relationship as it brings to him.

The idea that the discipline and practice of medicine make one a poor business man is absurd and false. Furthermore, the doctor can be "a good business man" and administrator without sacrificing anything of his art or ethics—on the contrary he may augment both. Witness the Mayo Clinic and Foundation; Victor G. Heiser, who is the beau ideal of traveling salesmen—for "wholesale public health"; and our Surgeons General of renown who are claimed equally by the art of arms and medicine. If some form of wholesale therapeutics or "homoculture" is desired, physicians must not only continue to recreate medicine and maintain standards as they have in the past, but they must accept the additional burden of administration, since it is they, and they alone, who are qualified and competent for this task.

> "Not as a ladder from earth to heaven;
> Not as a witness to any creed,
> But simple service simply given to his own
> kind in their common need."

WILLIAM J. MALLORY, M.D.

NATIONAL HEALTH CONFERENCE

It is extremely important that members of the Medical Society of the District of Columbia inform themselves regarding proceedings of the National Health Conference held in Washington, July 18 to 20. Although a complete text of the reports submitted by the Interdepartmental Committee to Coördinate Health and Welfare Activities to the Conference was published in the July 30 issue of the Journal of the American Medical Association, many members of the Society have undoubtedly either overlooked it or have not taken the time to digest its contents. Furthermore, comments and addresses made at the Conference were not published in the Journal. It has, therefore, been thought advisable to include in this issue of the Medical Annals a summary of the National Health Program, together with excerpts from what appear to have been the most significant addresses made at the Conference.

The attitude of the Conference toward problems under discussion was, of course, affected by the complexion of its delegates. Of the 171 delegates participating, 53 were Doctors of Medicine. However, a number of these represented the Government, health departments, welfare organizations, hospitals, etc. Dr. Morris Fishbein, in a talk which he gave, estimated that 10 members of the House of Delegates of the American Medical Association were present.

It is enlightening perhaps to analyze the affiliations of delegates to the Conference in detail. According to the information made available to us:

20 were affiliated with public health organizations and agencies.
20 with social and welfare organizations.
9 with local, state, and national governments.
9 with hospital management.
3 with the American Legion.
20 with labor organizations.
8 with agricultural groups.
8 with women's organizations.
11 with journalism.
9 with industry.
4 with economics.
50 with miscellaneous groups such as medical, dental, osteopathic, optometric, judicial, and others.

The majority of the delegates who spoke were enthusiastically in favor of the proposed Federal Program and many demanded prompt action. Not a few were severely critical of the American Medical Association and state medical associations for their stand on some of the proposals made. A few of these were physicians, among them Dr. Hugh Cabot, who attacked by inference the American Medical Association for its policy of "doing nothing and doing it skillfully." Dr. Cabot said, "As at present organized, medicine is a competitive business. Many of us have the greatest difficulty in reconciling competition with the ideal which we were taught and which many of us even at my age continue to believe is the basis of the profession; we remember as long as we remember anything the fact that medical service sprang from the church as have all great services of the community. And how is it possible in a highly commercialized environment to maintain a service organization on a competitive basis?"

Dr. Irvin Abell, President of the Association; Dr. Olin West, Secretary; and Dr. Morris Fishbein, Editor of the Journal, vigorously defended the policies of the American Medical Association and urged the need for a careful approach to the adoption of a general health program for the nation, warning those present of the dangers of too hasty action. They promised that the Association would lend its facilities and its coöperation. Views expressed by Drs. Abell, West, and Fishbein were supported by Dr. S. S. Goldwater, Commissioner of the Department of Hospitals, New York City, and The Reverend Alphonse M. Schwitalla, S.J., long prominent in Catholic hospital work.

Because of the support and encouragement given the proposed National Health Program by governmental and non-governmental bodies, it takes on a deep significance for the medical profession of this country. It is evident that the profession must not only be informed but be realistic. The best assurance that the profession will act wisely is that it knows the facts.

Recommendations which were considered by the Conference were:

1. Expansion of general health services requiring an additional annual expenditure of $200,000,000.00.
2. Expansion of maternal and child health services requiring an additional annual expenditure of $165,000,000.00.
3. Hospital construction and partial maintenance program to construct 360,000 beds and 500 health and diagnostic centers requiring an annual appropriation of $146,050,000.00.
4. Expansion of facilities for medical care of the medical needy to reach an appropriation of $400,000,000.00.
5. Compulsory health insurance with Federal subsidy.

It was made clear in the recommendations for the establishment of the complete program that it is not expected that it can be fully realized for a period of several years. However, the first four proposals, it is contemplated, shall be carried out at the earliest possible moment.

A NATIONAL HEALTH PROGRAM

A SUMMARY

OF THE PROGRAM RECOMMENDED BY THE TECHNICAL COMMITTEE ON MEDICAL CARE TO THE INTERDEPARTMENTAL COMMITTEE TO COÖRDINATE HEALTH AND WELFARE ACTIVITIES AND PRESENTED TO THE PRESIDENT, FEBRUARY 14, 1938; SUBMITTED TO THE NATIONAL HEALTH CONFERENCE AT WASHINGTON, D. C., JULY 18–20, 1938

The Technical Committee's study of health and medical services in the United States indicates that deficiencies in the present health services fall into four broad categories:

1. Preventive health services for the nation as a whole are grossly insufficient.
2. Hospital and other institutional facilities are inadequate in many communities, especially in rural areas, and financial support for hospital care and for professional services in hospitals is both insufficient and precarious, especially for services to people who cannot pay the costs of the care they need.
3. One third of the population, including persons with or without income is receiving inadequate or no medical service.
4. An even larger fraction of the population suffers from economic burdens created by illness.

The Committee submits a program of five recommendations for meeting with reasonable adequacy existing deficiencies in the nation's health services. Estimates of the total additional annual costs to Federal, State and local governments of Recommendations I, II, and III are also submitted. The Committee does not suggest that it is practicable to put into effect immediately the maximum recommendations. It contemplates a gradual expansion along well-planned lines with a view to achieving operation on a full scale within 10 years. Except insofar as they overlap and include portions of the first three recommendations, Recommendations IV and V involve chiefly a revision of present methods of making certain expenditures, rather than an increase in these expenditures.

RECOMMENDATION I: EXPANSION OF PUBLIC HEALTH AND MATERNAL AND CHILD HEALTH SERVICES

The Committee recommends the expansion of existing coöperative programs under Title VI (Public Health Services) and Title V (Maternal and Child Health Services) of the Social Security Act.

A. Expansion of General Public Health Services (Title VI): Fundamental to an expanding program of preventive health services is the strengthening and extension of organized public health services in the States and in local communities. It is recommended that Federal participation in the existing coöperative program should be increased with a view toward equalizing the provision of general public health services throughout the nation. The Committee further recommends that increasing Federal participation be utilized to promote a frontal attack on certain important causes of sickness and death for the control of which public health possesses effective weapons.

The Committee tentatively estimates that, at its peak, an adequate program of expanded public health service would require additional annual expenditures by Federal, State and local governments of $200,000,000 for these purposes: strengthening of public health organization; the eradication of tuberculosis, venereal diseases and malaria; the control of mortality from pneumonia and from cancer; mental hygiene and industrial hygiene. The Committee recommends that approximately one half of these increased funds be provided by the Federal Government.

B. Expansion of Maternal and Child Health Services (Title V): Included in this part of the recommended program are provisions for medical and nursing care of mothers and their newborn infants; medical care of children; services for crippled children; consultation services of specialists; and more adequate provisions for the postgraduate training of professional personnel. The objective sought in this phase of the Committee's proposed program is to make available to mothers and children of all income groups and in all parts of the United States minimum medical services essential for the reduction of our needlessly high maternal mortality rates and death rates among infants, and for the prevention in childhood of diseases and conditions leading to serious disabilities in later years.

The Committee recommends a gradually expanding program reaching at least by the tenth year a total additional annual expenditure of $165,000,000, distributed as follows:

Maternity care and care of newborn infants	$95,000,000
Medical care of children	60,000,000
Services for crippled children	10,000,000

The Committee recommends that approximately one half of the cost of the expanded program should be met by the Federal Government.

RECOMMENDATIONS II, III AND IV: EXPANSION OF MEDICAL SERVICES AND FACILITIES

The Committee has also explored the adequacy of services for the sick, the sickness experience of and the receipt of professional and hospital services by broad groups of the population. The Committee finds that the needs for diagnostic and therapeutic services to individuals are greatly in excess of such accomplishments as might be effected by a strengthened program of preventive services—important as such services may be as a first step. Indeed, it has been recognized in Recommendation I that certain important causes of sickness and death require for their eradication or control, the application of diagnostic and therapeutic procedures through services to individuals in need of such care.

The Committee finds that current practices in the provision of medical services and facilities fall far short of meeting these needs. It has taken account of personnel and facilities, financial support of services required by persons who are themselves unable to pay for the care they need, the sickness burdens of self-supporting persons, methods of paying for medical care and of assuring income for workers who are disabled by sickness. It finds that these needs warrant an expansion of medical services and facilities on a broader front than that contemplated in Recommendation I alone.

RECOMMENDATION II: EXPANSION OF HOSPITAL FACILITIES

The Technical Committee has made a special study of deficiencies in existing hospital and other institutional facilities. It is impressed with the increasing part which hospitals play, year after year, in the health and sickness services. Without adequate hospitals and clinics, it is impossible to provide many of the important services which modern medicine can furnish.

The Committee finds hospital accommodations and hospital organization throughout the country ill-adapted to the varying needs of people living under different social, economic and geographical circumstances. In hospitals offering general care, the percentage of beds supported by patient's fees is out of proportion to the ability of the population served to pay, hence many general hospital beds are empty a large part of the time. Conversely, there are too few low-cost or free beds to satisfy the needs. By far the greater majority of these are found in our large metropolitan centers. There are wide areas—some 1,300 counties—having no registered general hospitals; others are served only by one or two small proprietary institutions. Only in large city hospitals have outpatient clinics been developed to any considerable extent; governmental tuberculosis sanatoria and mental institutions tend to be overcrowded, or are otherwise restricted in funds or personnel for rendering the community service which they should be equipped to give.

The Committee recommends a 10-year program providing for the expansion of the nation's hospital facilities by the provision of 360,000 beds—in general, tuberculosis, and mental hospitals, in rural and urban areas—and by the construction of 500 health and diagnostic centers in areas inaccessible to hospitals. These new hospitals or units would require financial assistance during the first 3 years of operation. Special Federal aid for this purpose is suggested.

Averaged over a 10-year period, the total annual cost of such a program, including special 3-year grants for maintenance of new institutions is estimated at $146,050,000 divided as follows:

	Construction	3-Year Maintenance
General and special	$63,000,000	$21,600,000
Tuberculosis	15,000,000	6,000,000
Mental	32,500,000	7,800,000
Diagnostic centers	150,000	
Total Average Annual Cost	$110,650,000	$35,400,000

The Committee recommends that approximately one half of this total annual cost be met by the Federal Government. It points out that a large hospital construction program should not be undertaken unless there is a concurrent program to give continuing aid toward the cost of free services such as is included in Recommendation III.

RECOMMENDATION III: MEDICAL CARE FOR THE MEDICALLY NEEDY

The Committee is impressed with the evidence now available that one third of the population which is in the lower income levels is receiving inadequate general medical services. This applies to persons without income and supported by general relief and to those being supported through old-age assistance, aid for dependent children, or work relief, and also to families with small incomes. These people are doubly handicapped. They have higher rates of sickness and disablement than prevail among groups with larger incomes, and they have lesser capacities to buy and pay for the services they need. Current provision to assist these people—though generously given in many State and local governments, by voluntary organizations, and by professional practitioners—are not equal to meet the need.

The Committee recommends that the Federal Government, through grants-in-aid to the States, implement the provision of public medical care to two broad groups of the population: (1) To those for whom local, State or Federal Governments, jointly or singly, have already accepted some responsibility through the public assistance provisions of the Social Security Act, through the work relief programs or through provision of general relief; (2) to those who, though able to obtain food, shelter and clothing from their own resources, are unable to procure necessary medical care. It is estimated that, on the average, $10 per person annually would be required to meet the minimum needs of these two groups for essential medical services, hospitalization, and emergency dentistry. This part of the program might be begun with the expenditure of $50,000,000 the first year and gradually expanded until it reaches the estimated level of $400,000,000 which would be needed to provide minimum care to the medically needy groups. The Committee recommends that one half of the total annual costs be met by the Federal Government.

RECOMMENDATION IV: A GENERAL PROGRAM OF MEDICAL CARE

The Committee directs attention to the economic burdens created by sickness for self-supporting persons. There is need for measures which will enable people to anticipate and to meet sickness costs on a budget basis.

No conclusion has emerged more regularly from studies on sickness costs than this: The costs of sickness are burdensome more because they fall unexpectedly and unevenly than because they are large in the aggregate for the nation, or, on the average, for the individual family. Except in those years when unemployment is widely prevalent sickness is commonly the leading cause of social and economic insecurity. Without great increase in total national expenditures, the burdens of sickness costs can be greatly reduced through appropriate devices to distribute these costs among groups of people and over periods of time.

The Committee recommends consideration of a comprehensive program designed to increase and improve medical services for the entire population. Such a program would be directed toward closing the gaps in a health program of national scope left in the provisions of Recommendations I and III. To finance the program two sources of funds could be drawn upon: (a) General taxation or special tax assessments, and (b) specific insurance contributions from the potential beneficiaries of an insurance system. The Committee recommends consideration of both methods, recognizing that they may be used separately or in combination.

Such a program should preserve a high degree of flexibility, in order to allow for individual initiative, and for geographical variations in economic conditions, medical facilities, and governmental organization. It should provide continuing and increased incentives to the development and maintenance of high standards of professional preparation and professional service; it should apportion costs and timing of payments so as to reduce the burdens of medical costs and to remove the economic barriers which now militate against the receipt of adequate care.

Planning for a program of medical care of a magnitude to serve the entire population essentially must be approached as an objective to be fully attained only after some years of development. The rôle of the Federal Government should be principally that of giving financial and technical aid to the States in their development of sound programs through procedures largely of their own choice.

RECOMMENDATION V: INSURANCE AGAINST THE LOSS OF WAGES DURING SICKNESS

The Committee recognizes the importance of assuring wage earners continuity of income through periods of disability. A disability compensation program is not necessarily part of a medical care program, but the cost of compensating for disability would be needlessly high if wage earners generally did not receive the medical care necessary to return them to work as soon as possible.

Temporary disability insurance can perhaps be established along lines analogous to unemployment compensation; permanent disability (invalidity) insurance may be developed through the system of old-age insurance.

COSTS OF THE PROPOSED PROGRAM

The maximum annual cost to Federal, State and local governments of Recommendations I, II and III (with duplications eliminated) is estimated at about $850,000,000. This figure is the estimated total annual cost at the full level of operation within a 10-year period and is presented primarily as a gauge of need. It is suggested that the Federal share of this amount would be approximately one half.

The estimated total includes: (1) $705,000,000—the additional annual expenditures for certain general health services to the entire population, and for medical services to limited groups of the population—the public assistance and otherwise medically needy groups—which should be reached within a 10-year period, and (2) $145,000,000—the approximate average annual cost of hospital construction and special grants-in-aid in the 10-year program proposed under Recommendation II.

Recommendation IV is presented primarily as a more economical and more effective method of making current expenditures for medical care, though it also makes provision for the medical care of persons who are not now receiving even essential services. An adequate general program of medical care is proposed in the form of alternative arrangements which may cost up to a maximum of $20 per person a year, i.e., no more than is already being spent through private purchase of medical care. Annual aid from government funds would be necessary to provide services for the care of the medically needy as proposed in Recommendation III and for the parts of Recommendation I which are included in the broad program set forth in Recommendation IV.

The Committee calls attention to the fact that, in some important respects, the five recommendations present alternative choices. However, the Committee is of the opinion that Recommendations I and II should be given special emphasis and priority in any consideration of a national health program more limited in scope than that which is outlined in the entire series of recommendations.

The Technical Committee on Medical Care is firm in its conviction that, as progress is made toward the control of various diseases and conditions, as facilities and services commensurate with the high standards of American medical practice are made more generally available, the coming decade, under a national health program, will see a major reduction in needless loss of life and suffering—an increasing prospect for longer years of productive, self-supporting life in our population.

MARTHA M. ELIOT, *Chairman,*
Children's Bureau

I. S. FALK
Social Security Board

JOSEPH W. MOUNTIN
GEORGE ST. J. PERROTT
CLIFFORD E. WALLER
United States Public Health Service

PRESIDENT'S MESSAGE TO THE NATIONAL HEALTH CONFERENCE

THE WHITE HOUSE
WASHINGTON
JULY 15, 1938

My dear Miss Roche:

I am glad that your committee has had such an excellent response to its invitations to representatives of the public and of the medical and other professions to participate in the National Health Conference. I regret that because I shall be on a cruise I shall be unable to speak to the Conference.

I am glad that the Conference includes so many representatives of the general public. The professional experts can, and, I feel sure, will do their part. But the problems before you are in a real sense public problems. The ways and means of dealing with them must be determined with a view to the best interests of all our citizens.

I hope that your technical committee's report on the need for a national health program and its tentative proposals will be read and studied not only by the participants in the Conference but by every citizen. Nothing is more important to a nation than the health of its people. Medical science has made remarkable strides and in coöperation with government and voluntary agencies it has made substantial progress in the control of various diseases. During the last few years we have taken several additional steps forward through the extension of public health and maternal and child welfare services under the Social Security Act, the launching of a special campaign to control syphilis, the establishment of the National Cancer Institute, and the use of Federal emergency funds for the expansion of hospital and sanitation facilities, the control of malaria, and many related purposes.

But when we see what we know how to do yet have not done, it is clear that there is need for a coördinated national program of action. Such a program necessarily must take account of the fact that millions of citizens lack the individual means to pay for adequate medical care. The economic loss due to sickness is a very serious matter not only for many families with and without incomes but for the nation as a whole.

We cannot do all at once everything that we should do. But we can advance more surely if we have before us a comprehensive, long-range program, providing for the most efficient coöperation of Federal, state, and local governments, voluntary agencies, professional groups, mediums of public information, and individual citizens. I hope that at the National Health Conference a chart for continuing concerted action will begin to take form.

Very sincerely yours,

(Signed) FRANKLIN D. ROOSEVELT

EXTRACTS FROM ADDRESSES

THE SIGNIFICANCE OF THE NATIONAL HEALTH CONFERENCE*

THOMAS PARRAN, M.D.

Surgeon General of the United States Public Health Service

. . . The National Health Conference differs in at least two important respects from similar conferences held in the past. First, it has brought together not only the medical and other professional experts, but representatives of labor, the farmers, and other groups of citizens who receive—or would like to receive—adequate health services and medical care. This is definite recognition that the conservation of the health of our people is a public problem. As the President said in a message to the conference yesterday morning, the professional experts can help but the ways and means of dealing with this problem "must be determined with a view to the best interests of all our citizens."

Secondly, this National Conference is distinguished by the fact that it is intended to lead to action. . . .

. . . the conference is not primarily concerned with spreading the cost of sickness. Its first concern is to reduce the amount of sickness in this country. The American Medical Association and the representatives of all consumer groups agree on this objective. There is an agreement also that the underprivileged groups of our population, who cannot provide good medical care for themselves, need help from public funds if they are to have the benefit of medical science. The people are beginning to take it for granted that an equal opportunity for health is a basic American right. There seems to be unanimity of opinion that no one stock program of health will be applicable throughout the country. There is no suggestion of a federally dictated medical and health service for every town and village. Responsibility for devising the best ways and means of increasing the amount and quality of medical care rests on state and local authorities with the stimulation of Federal financial support. As yet there is no agreement as to how the cost can best be shared between Federal, state and local funds.

Those of us who are concerned with the progress of medical science usually think that the great events of medicine occur only in the research laboratory, or the operating room. We are witnessing here in Washington another kind of progress in medicine—an effort to put medical science to work. The National Health Conference may well be the greatest event in medical science which has happened in our time.

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* From the broadcast over the Columbia Broadcasting System, Tuesday evening, July 19.

"CHANGES . . . MUST BE CONSISTENT"

IRVIN ABELL, M.D.

President, American Medical Association

. . . There can be little disagreement on certain fundamental objectives in regard to medical care. The medical profession agrees with all other agencies on the importance of the following objectives: the provision of good medical care for all the people; the development of comprehensive preventive and public health services; the development of appropriate measures to combat specific health problems; and a continuous, orderly improvement of the distribution of medical services and hospital facilities, both by geographic and economic divisions.

The medical profession would be the "last to deny the existence of medical needs" in the United States. Its whole mission has been to fulfil those needs, and it has always sought to meet every need as it arises by the development of appropriate medical services. The profession, however, cannot be blind to the fact that there are other unfulfilled needs, especially such as relate to food, clothing and housing, which are often as essential to the preservation of health as is medical care. It is impossible to isolate medical care from these other needs either with regard to the preservation of health or in the formulation of a health program; neither can medical care be looked upon as a substitute for such other essentials.

From time immemorial American communities have jealously guarded the right to determine the nature of education given in their schools and the kind of medical care given to their people.

I think it is important to realize the historic fact that every board of health, every medical school, every hospital and every other agency which has to do with the diagnosis, prevention and cure of disease, has been organized as a direct result of medical leadership. The people of the United States are receiving today the best medical care, and have on the whole, the best organized and the most effective health departments of any country on the globe.

It is easy to say that there are many thousands or millions living in economic conditions where health and happiness are impossible in a democracy as vast as ours.

But, I would like for you to realize that this problem varies not only from state to state; it varies so much in the different counties or townships in each state, that most formulas imposed on our people as a whole would do a great deal more harm than good. It is with this purpose in view, and as a result of the very able address delivered by Miss Josephine Roche at the meeting of the American Public Health Association last year, that the American Medical Association has inaugurated and is pushing to completion a painstaking study of the needs of medical care and the method for their provision in each county in the United States.

It is perfectly obvious that hundreds of factors must be taken into consideration in each of these counties before correct diagnosis and treatment may be prescribed. Those people who think that they can devise a centrally controlled medical service plan which can be fitted to the varying conditions of the states, counties and cities of this country are discussing theories which no practical health administrator could possibly approve.

Because of the variation of health needs according to localities and because of the present extensive system of providing medical services, it is believed highly important to determine the nature and extent of medical needs in every county of the United States.

The medical profession and the allied health agencies throughout the country are exerting every effort to determine the needs and the demands for medical care. Changes to meet health needs must be consistent with local conditions and requirements and must be judged by the effect which such changes will have on the quality of the medical care for the individual sick person.

If this Conference could develop a plan under medical control which would continually have the support, advice and approval of the physicians of this country for a better distribution of physicians, so as to provide for medical care of the indigent and near indigent people where it is found necessary under plans locally approved, State by State, it will have accomplished a great deal not only for the preservation of scientific medicine but also for the preservation of the lives and liberties and the happiness and effectiveness of our people.

"TOO SIMPLE TO BE RELIABLE"

S. S. GOLDWATER, M.D.

Commissioner of the Department of Hospitals, New York City

The objectives stated by spokesmen for the Interdepartmental Committee are commendable, but the program submitted arrives at its results by methods of calculation that are too simple to be reliable. Neglected illness is not always convertible by means of money grants or administrative measures into illness effectively prevented or cared for. A substantial fraction of increased government expenditure is almost certain to be used for more custodial care.

Another larger fraction is likely to be absorbed by the simple substitution of paid for unpaid medical service, and by more liberal conditions of employment for nurses and other institutional personnel.

Sincere enthusiasts who, 30 years ago, were sure that tuberculosis would be abolished by 1935, are still writing optimistic tuberculosis programs in glamorous terms of hundreds of fresh millions of dollars.

In health-protection, self-help is preferable to outside aid; government intervention in medicine is desirable as a last, not a first, resort.

If a wider application of the voluntary insurance principle will produce a readier flow of effective service, the principle is entitled to support. The assumption that it cannot reach more than a small fraction of those who need aid or protection is unwarranted.

For similar reasons the efforts of county medical societies and of medical coöperatives sponsored by ethical physicians should be encouraged. These efforts are of primary importance in relation to home care, which is of concern to a greater number of individuals than actual or theoretically required institutional care.

A clearly defined policy in relation to the gratuitous services of physicians is desirable. Such services cannot justly be demanded. Must they therefore be discarded?

Medical care should be locally, rather than nationally, administered. The effective and economical administration of medical aid for the masses by huge Federal agencies is well nigh impossible.

The appropriation of funds for the creation or support of a local medical agency is no guarantee that the agency will do what is expected of it. In the development of medical programs, emphasis should be placed on the critical evaluation and periodic revaluation of the services actually rendered.

It is unwise for the Government to make grants to agencies that have no interest in economical administration.

Caution is required in dealing with private agencies that conduct mixed services for rich and poor without clear accounting methods. Voluntary donations for the benefit of the sick poor have at times been diverted.

It is conceded that social-economic conditions affect health. Logically, all influences injurious to health should be attacked in a balanced, comprehensive program.

Medical care is not the only human need which exceeds the purchasing power of the low-income groups. If health is essential to effective citizenship, so also is education. Should complete medical service and unlimited higher education for the masses be used for the charting of immediate working programs for Government today, or should they rather be set up as social ideals?

"THE TIME HAS COME FOR ACTION"

EDWIN E. WITTE

Professor of Economics, University of Wisconsin

. . . I have been impressed by the widespread support that there now appears to be for health insurance. Representatives of the farmer organizations, the greatest farm organizations of the country, both labor groups, many civic organizations, many medical groups and many medical men, have addressed us and have given support at least in principle to the idea that the time is ripe for a more adequate program for general medical care.

I think it needs to be said that this enthusiasm will not necessarily mean that we will have legislation. I have vividly in mind the experience of the Committee on Economic Security with health insurance. As Mr. Kellogg said yesterday evening, the Advisory Council of that Committee gave consideration to these same problems, and reference was made today to the fact that we had many advisory groups on which served a great many of the people who are in this audience. Further, the Committee on Economic Security itself, the Cabinet Committee, not only studied health insurance but in its report endorsed compulsory health insurance in principle, and that is as far as it dared to go lest it lose the entire program. When the Committee on Economic Security first announced that it was studying health insurance, it was at once subjected to a barrage of misrepresentation and accusation. In the original Social Security Bill there was one little line, a line to the effect that the Social Security Board should study the problem of health insurance and make a report thereon to Congress. That little line led to such a barrage of telegrams to the members of Congress that the entire program seemed endangered until the Ways and Means Committee unanimously struck out that little line in the bill.

I feel quite sure that there will be similar opposition if an effort is made to get the next Congress to pass legislation along the lines that have been recommended by the Technical Committee; there will be great concern expressed about the costs, . . . We will hear a great deal more than we have heard about regimenting the medical profession, putting medicine under the control of politicians, the grave dangers of socialized medicine, about this program being un-American and undemocratic. . . .

I also share the fear expressed . . . that when the time for action comes in Congress there is grave danger that there will be division of opinion among the supporters of this program, the situation that when the members of Congress have to make up their minds about this program all of the communications they receive will be critical opposition on the part of those who do not believe in the program, opposition on the part of those who say, "This doesn't go far enough, this doesn't meet this principle or that principle that is fundamental." If that situation develops, then of course the forecast that Dr. West made yesterday evening . . . will prove true; it will prove true because the proposed legislation will die aborning. . . .

If anything is to come out of this discussion, out of this Conference, out of the work of the Committee, I think it is essential first of all that all supporters of the legislation must present a united front and let the Members of Congress and of the state legislatures know where they stand.

. . . I think it is quite clear that we must have state as well as Federal legislation. I sympathize with the view expressed by Mr. Pressman yesterday evening that the entire problem can best be dealt with by the Federal Government. The great progress which has been made in recent years under the leadership of a progressive national administration naturally suggests that we would be ahead if we had a completely centralized form of government, but we still have a Federal system and there is little prospect that the states will soon disappear from the picture. Moreover, we need to remember that until very recently most of the progress made in public health work has been made by the state and local governments, although the Federal Government has had the same authority to act in this field that it now has.

I am still not sure that it is any easier to get Congress to act than the state legislatures. . . .

I conclude with the keynote that the time has come for action and not merely for discussion and endorsements. We need to translate our enthusiasm into action and I think should begin at home. Let us continue to discuss the problem, but let us present a united front for action, so that at least some part of the fine program presented by the Technical Committee may be realized next year when Congress and 44 state legislatures will be in session.

"THE GOVERNMENT MAY BE TRUSTED"

ROBERT OSGOOD, M.D.

Professor Emeritus, Harvard University School of Medicine

. . . Government and the public must help us, but if they try to take away such independence of action of the physicians as is dictated by their consciences, we as physicians will fail them. Good medical care cannot be delivered without good and willing doctors. As a profession which has been for many centuries unusually independent, we fear the further invasion of governments into our concern. I would remind you that this fear is aroused by motives which are largely unselfish. Much of my own personal fear has been removed since I have watched the administration of the medical portion of the Social Security Act under Miss Lenroot's and Dr. Eliot's directorship. With this I have been somewhat intimately concerned. No philanthropic or medical agency could have been more determined to maintain the highest standards of private medical practice. There are many doctors who must have shared my experience and many more who, as time goes on, will be found to be willing to explore these problems and coöperate to the fullest possible extent in attempts to solve them.

I wonder whether anyone has suggested the possible usefulness of a National Health Council which would have no executive power, but which should be asked to act in a purely advisory capacity in matters of health.

If such a Council had no political affiliations and was made up of outstanding physicians, respected and trusted by the medical profession and the public, it might well serve as a most useful liaison between the Government and organized medicine and give us frightened doctors a little more confidence.

If we as physicians live up to our creed and continue to place the good health of our patients before the good contents of our pocketbooks, I believe the laity and the Government may be trusted to see to it that our spiritual and carnal lot is not made hard enough to prevent us from serving you with dignity of both body and mind. . . .

"WE BELIEVE THERE SHOULD BE . . . A COMPULSORY PLAN"

JOSEPH A. PADWAY

General Counsel, American Federation of Labor

. . . We believe there should be a compulsory set-up, a compulsory plan which will afford to every human being needing it within certain classifications, medical attention, wage compensation and the other elements that have been discussed in these papers. And we are definitely committed to this, that the plan should be placed within the Social Security Board, and we want to say here and now, and go on record, that we are well satisfied with the operation of the Social Security plan within the Social Security Board, and if anybody tells anyone to the contrary, I want to say here and now we have no criticism to make. The operation has been excellent. The Board has been well managed and well administered, and because of its reputation in the short time it has functioned, we want the plan placed there and the other departments coördinated and placed in the Social Security Board.

We realize there are deficiencies in the law, sure, there will be deficiencies in any law. No system is working perfectly, this or any other that is adopted, but so far as it is framed on the basis it is framed—and it is framed pretty well notwithstanding criticism to the contrary—we are pretty well satisfied—and I am talking for millions of people who are affiliated with the organized Labor Movement of America.

Something has been said about the voluntary plan, that we should permit the voluntary plan to take the place of this compulsory plan. The voluntary plan cannot take the place of the compulsory plan. Let's not kid ourselves. We have tried the voluntary plan in the commerical field. How many people are insured? The best illustration of the voluntary plan and the fact that it cannot be put across is in respect to insurance of automobiles which has been mentioned here. There are some twenty or thirty million cars on the road each and every day. How many of those cars are insured—and I mean insurance for protection against loss of property, damages to the car and injuries inflicted upon others? And yet, mind you, with twenty or thirty million cars in America, not 25 per cent of them are insured, and part of the 25 per cent are compelled to carry insurance because the cars are bought on time and those who sell them want to have security.

Your voluntary plan is expensive and many will feel they cannot afford it, and you must dismiss from your mind the possibility that you can cover this all-inclusive problem with a voluntary plan.

I realize the physicians have fears about the plan. Regardless of what the physician has said himself, he probably doesn't want to say he has some fears, and I say the fears are not founded, because while the physician may have some fear in respect to probably the low pay he may get for the calls he may make, or with respect to the great amount of work he may be called upon to do, nevertheless the same arguments were advanced when workmen's compensation legislation was advanced some quarter of a century ago, and yet all the States that have workmen's compensation, and the entire nation, will testify, including the medical profession itself, to the fact that the workmen's compensation has turned out excellently for the medical profession. In fact, many physicians clamor for the business that arises from the workmen's compensation; they are glad to get the insurance business. It has turned out to be an excellent and profitable business, and should be. I don't criticize it at all, but nevertheless all the apprehension that existed at that time, and the declaration that it would be full of politics, that the system would set up a panel and only one physician would be selected—all that in the course of evolution has been revised and changed and I doubt whether there is any reasonable physician who will arise today and say that the workmen's compensation plan has turned out badly for the physicians as a whole.

Something has been said by way of criticism of the physician. I am not here to speak for him but as a layman I feel it my duty, in view of the fact that there has been criticism, to say much of the criticism has been unfounded. Those on the other side of the table, those who are not physicians, are likely to criticize him, but has it ever occurred to those, whether they be lawyers or engineers or social workers, and particularly social workers, that if your clients were consulted, they would heap so much criticism on your heads that perhaps some of this criticism in comparison would seem insignificant.

You can criticize anyone. People come to me and say, "This social worker pried into my business and did this and that," and if we called a conference of social workers, to revise your plan of operation, you would see what a lot of criticism you would get.

Let's not be smug and complacent. That goes for the lawyers or any other profession. The fact remains that the physician has rendered an excellent service to the community. The fact remains that he is rendering an excellent service. I have had occasion over 25 years to have contact with physicians. I know they not only furnish a lot of service free; they get on hospital staffs, they perform their surgery and render medical care and attend clinics and render excellent service, and always have. There isn't any quarrel with them about that at all. They are to be commended for it. The only criticism I have is a constructive one, and that is this, that the physician must realize that there is some place where he stops; he can't go any further. There is some place in the problem where he can't advance and go beyond that point. Two hundred thousand physicians, with all their good intentions and all the money in the world, can't take care of the medical needs of the community or of the workers or of the public as a whole.

There is a place where they can render their service and do their work, and where that line stops the Government must take it up and go on with it; private agencies and churches can do their part but all of it will be only a small percentage of the whole, and in order to meet this great problem the Government must start in from that point.

And the Government must realize too, and those who have spoken with some feeling that they are going to throw this into the faces of the physicians and the physicians must take it willy-nilly whether they like it or not, that that is a bad attitude. The physician is a part of this great problem. He not only should be consulted and not only should he have something to say about the plan, but he must be an integral part of the board, whatever board there may be, within the Social Security Board, so he has equal say because it is a problem about which he knows a great deal. He must be there. Labor must be there, the public must be there. But let us not think for a moment that because they have made some blunders or errors we are going to saddle this plan upon them whether they like it or not and make them take it in the form it is submitted. They should have a good deal to say, they should be represented, they should be consulted and they themselves must not oppose the plan because it is going to come. In other words, there must be no sabotage on the part of the physicians as a whole. They must not sulk, they must not go about with a chip on their shoulders, they must not say, "We dislike the plan," because if they do they will set back their own progress many, many years. There must be full and complete coöperation.

The physician must, to use a colloquial expression, see the handwriting on the wall. Since it is going to come, he must be a part of it, help it along and give it the best he can give it, and devise the plan that will function best. . . .

"I WANT TO CHALLENGE . . ."

THE REVEREND ALPHONSE M. SCHWITALLA
Editor of Hospital Progress

. . . I want to challenge the statement that there is need or feasibility of equalization of medical care in urban and rural communities. It is an impossibility, and I have to be categorical to be brief.

I want to challenge the whole theory of equalization of medical service by the state, or by the classification of patients or the classification of diseases. I do not believe that you can equalize medical opportunities throughout this country, and what is more important and more obvious still, right in the document that has been presented yesterday on medical care you have already put into that document not equalization but disequality, and the one thing that was pleaded for from this platform is already contained, and necessarily contained, in the document that was read before you.

I also want to challenge, and challenge as effectively as I possibly can in a few words, the idea that illness increases with decreasing income. It is clear that there are correlations, just as you have a correlation described in this morning's paper between the incidence of tuberculosis and the incidence of genius, that was answered yesterday in the British Medical Association. There are many correlations, but in this particular matter, while there is a correlation, I think there are pitfalls to too rigorous application of the principle.

I want to challenge the assumption that there is less injury to human dignity and self-respect if the patient receives medical care from a tax-supported agency than if he receives it under the motivation of the virtue of Christian charity in a voluntary hospital or in a voluntary agency.

I want to challenge the theory that the indigent is a ward of the state or of government rather than being a ward of human society.

I want to challenge the assumption that a certain amount of caution at the present moment is unjustifiable merely because the whole area of medical care of the indigent is only so recently thrown back upon the voluntary hospitals. During the entire period of the depression we had to carry that burden.

And I want to challenge the assumption that medical education today, without endangering what has been done in the most stupendous and most wonderful scheme of medical education that has ever been devised, is ready to follow the program that has been here laid out.

FEDERAL OR STATE ADMINISTRATION?

LEE PRESSMAN
Counsel for the Committee on Industrial Organization

. . . In considering the problem as to whether it must be or shall be Federal administration or State administration, it seems to me that we must bear in mind the situation that we now have before us. We must recognize that today we have not got adequate medical service for our people in the country.

Now there are some reasons for that. It is fairly obvious that various state governments have not taken care of this problem, whether because they didn't think it necessary to give heed to the problem or because there were a few professional groups sufficiently strong before the various State Legislatures to prevent adequate programs from being enacted, I don't know, but the net result is that we have not got a program adequate for our poor and our workers in the country in many States throughout the country.

With that in mind, it is difficult for me to understand why we think we will solve our problem merely by appropriating some funds on the part of the Federal Government and give such funds to the very organs that have heretofore refused to give heed to the problem that we are now considering. The same groups that prevented adequate programs from being enacted in the different states will still retain sufficient control to see to it that the funds that may be given by the Federal Government to those states will not be used in a manner undoubtedly sought and cared for by this Conference, or in connection with any program that we may care to recommend that may be enacted by Congress.

What is more, it is always difficult to try to understand what is so biblical about these state lines that we talk about. What are the so-called diversifications in local needs? What are we talking about when we mention the different kinds of state problems, or local problems, with regard to health? I always thought that if there was one problem which certainly did not give heed to state lines, it was the problem of the health of the people.

We wonder, how can we possibly have the human genius to administer a Federal program. Well, that kind of inferiority complex, unfortunately, is always used, by the reactionary forces that simply try to prevent us from having any program.

. . . There is nothing inherently contradictory with having local support, local aid and local coöperation, even though we have Federal administration of a program. It is our feeling on the part of labor that no program for adequate health facilities can possibly be administered unless it is administered through a Federal agency.

. . . One of the questions raised . . . is the manner in which we will obtain our funds. We talk about public taxation or Federal insurance, or both, and in connection with Federal insurance as if the words were tied together, we must hear discussion about pay roll taxes, and of course pay roll taxes necessarily involve, in the discussion, a tax on the employees' pay roll . . . we talk glibly about placing another tax on the direct income of those people who cannot even maintain themselves now on a decent standard. What is the purpose in providing one program to give them a particular service and then charging the very people whom we openly admit haven't got the funds to take care of that service, so that they cannot have some other basic necessity, food, clothing, shelter, by virtue of the fact that they have got to pay another tax to take care of this other service we provided for them.

If realistically we are determined to have a program to add a new service for the people of our country, let us then not talk about getting further taxes from those very people.

I don't know enough about the taxation, as to whether general taxation is preferable as against a pay roll tax on the employers. We know, just as a realistic matter without all these tables and statistics that we get from economists, that even a pay roll tax on employers reverts back on the employees where they are not organized, so that just with that idea in mind I would like to leave before this Conference that in considering the method of taxation, even with regard to health insurance, whether the fund should not be obtained from general taxation and general appropriation by the Government to maintain the insurance, or whether a pay roll tax is necessary I don't know, but not a pay roll tax on the income of the employees. . . .

"GREAT DANGER TO THE HEALTH OF THIS NATION"

OLIN WEST, M.D.

Secretary-Manager, American Medical Association

. . . It is my very earnest conviction that if it is possible to put into operation the great program that has been presented here today, I doubt that there is anybody in the Conference, outside of the committeemen who drew it up, who begins to appreciate the potential complexities in the situation that will develop from an effort to put such plans into operation.

I wonder—and I know many will not agree with this opinion, too—whether it is a wise thing to project far-reaching policies on the basis of conditions that exist in such an artificial situation as that in which we find ourselves today. I hope to God it is an artificial situation. I should hate to think that it is to be an eternal thing with this nation that we are to have to continue the same conditions with respect to unemployment, and with respect to other important phases of the national life as now confront us.

I think we should have learned a lesson from what happened to us on the basis of far-reaching policies that were projected so enthusiastically during another situation which in my opinion at least was quite as artificial as the one which now exists, and I refer to the situation that existed when we were supposed to be riding a high wave of prosperity, which was just as artificial, as I see it, as the conditions that exist today. And God knows that some of the policies that were projected at that time have certainly gotten us into a terrible mess.

. . . I can tell you now whether you believe that or not that there is no one plan for the provision of medical services that is going to operate successfully and satisfactorily in all of the states and counties and communities of this nation, and I predict that you are going to find it out before you have gone very far.

I constantly hear certain small European countries held up as the very paragons—is that a good word, Mr. Chairman—of virtue in these matters. Why, we have got counties in the United States where some of our friends want to build three and four hundred bed hospitals, with a population of five or less per square mile, in which you could drop these countries and never know they were there. They are countries with a purely homogeneous population. They are countries that have been subjected to strict governmental measures and strict government dictation for generation after generation.

I do not believe that the methods which seem to have succeeded to a certain extent in one or two of those countries and the methods that have been attempted in other countries of much larger population and have failed, will ever work satisfactorily in America.

I believe there is great danger to the health of this nation, danger to the welfare of those who are in need and will always be in need—our people will always be in need of medical service—through the centralization of control of medical service by any state agency, and I know that is not a popular view, too, particularly in this audience. But the records as I read them at least certainly show that to be true beyond question.

My belief is that whatever plan is eventually put into operation in the United States must be based on local conditions and local needs and that if it is to be at all successfully operated, it must be operated under local direction and with local responsibility. . . .

CALENDAR FOR COMING MEETINGS

Wednesday, October 5: Business Meeting. Reports of committees, etc.

Wednesday, October 12: Symposium on Spotted Fever.

1. "Rocky Mountain Spotted Fever. Distribution and Epidemiology." R. E. Dyer, M.D.
2. "Pathology of Rocky Mountain Spotted Fever." Ralph D. Lillie, M.D.
3. "The Clinical Problem of 'Tick Fever'." (Lantern slides.) Charles R. L. Halley, M.D.
4. "The Pediatric Problems of 'Tick Fever'." Harry A. Ong, M.D., and Joseph Raffetto, M.D.

Wednesday, October 19: "Pneumonia: A Résumé of Recent Prophylactic Measures with Their Evaluation, Especially as Appertain to Measures Instituted in the District of Columbia." T. J. Abernethy, M.D., and Harry F. Dowling, M.D.

Wednesday, October 26: "Cardiology." The program will be devoted to discussion of innovations and refinements in diagnosis of circulatory dysfunction. There will be two local participants with possibly an out-of-town guest speaker.

NEWS AND PERSONALS

Committees have continued their activities throughout the summer. The Committees which have been active and the dates on which they have held meetings are as follows:

Blood Transfusion Service: July 22, August 26, September 8.
Board of Public Welfare Advisory: June 13.
Compensation, Contract & Industrial Medicine: July 27.
Executive: June 6; July 1, 6, 26; August 1, 3; September 7.
House: June 3.
Medical Economics: July 14, August 16, September 8.
Obstetrical Board: June 20, July 11, August 22, September 19.
Public Health: June 27; July 26, September 2.
Public Information: July 8, 19.
Public Relations: June 15, 24.

The American Association for the Study of Neoplastic Diseases held its regular meeting at the Mayflower Hotel, September 8–10. Numerous presentations of unusual lesions were made by physicians from New York, Pennsylvania, Maryland, Virginia, Michigan, Ohio, Oklahoma, New Hampshire, and the District of Columbia. Dr. Ramsay Spillman of New York, formerly of Washington, appeared on the program and there were presentations by the following local physicians, members of the Medical Society of the District of Columbia:

Drs. Janvier W. Lindsay, E. Clarence Rice, R. M. Choisser, H. C. Macatee, J. Burton Glenn, J. Ogle Warfield, Jr., Jacob Kotz, and Eugene R. Whitmore. The officers of the Association are: L. Clarence Cohn, Baltimore, *President*; A. J. Ayers, Atlanta, Ga., *Vice President*; Janvier W. Lindsay, *Treasurer*; Eugene R. Whitmore, *Secretary;* Wright Clarkson, Louise D. Larimore, Julian L. Rawls, George A. Stuart, and the officers, *Council*.

The American Academy of Ophthalmology and Otolaryngology will hold its annual meeting in Washington, October 9–14, at The Mayflower Hotel. Members of the local Committee on Arrangements include:

Drs. William Thornwall Davis, *Chairman*, Ronald A. Cox, E. Leonard Goodman, R. Stevens Pendexter, Richard W. Wilkinson, Victor R. Alfaro, P. S. Constantinople, Harry F. Davies, G. Bache Gill, Carl Henning, James N. Greear, Jr., Benjamin Rones, Ernest Sheppard, G. Victor Simpson, E. Leonard Goodman, Richard A. Kearny, Samuel A. Alexander, Earle G. Breeding, David Davis, James A. Flynn, L. L. Sawyer, Jr., G. B. Trible, Charles W. Tegge, A. M. Zinkhan, S. B. Muncaster, J. C. Bradley, James H. Earley, Ella M. A. Enlows, Aubrey D. Fischer, Robert Scott Lamb, William C. Meloy, Edward J. Cummings, Oscar Wilkinson, L. Conner Moss. Mrs. William Thornwall Davis is Chairman of the Ladies' Committee.

The first meeting of the Academy will be held Sunday afternoon, October 9, when the President and Mrs. Harry S. Gradle of Chicago will receive members and guests. Guests of honor during the meeting will be the Surgeon General of the United States Army and Mrs. Charles R. Reynolds; the Surgeon General of the United States Navy and Mrs. Perceval S. Rossiter; and the Surgeon General of the United States Public Health Service and Mrs. Thomas Parran. The annual banquet will be held on Wednesday evening, October 12, in the grand ball room of The Mayflower, at which time Captain John B. Craig will speak to the Academy on "Danger is My Business," an illustrated lecture. The annual golf tournament will be held Friday, October 14, at the Congressional Country Club. Mrs. Franklin Delano Roosevelt has consented to receive the ladies of the Academy at The White House on Monday, October 10, at 4 P.M.

The scientific exhibit will be presented by the Army Medical Museum in its quarters between 2 and 4 P.M. on October 11–13, inclusive.

All physicians are welcome to attend the meeting of the Academy and to participate in its activities. Guest physicians, however, will be required to register, and a fee of $5.00 will be charged.

The Academy of Physical Medicine will meet in Washington, October 24–26, with the coöperation of government, medical, and scientific services. The headquarters hotel will be The Willard. Clinics will be held at Walter Reed General Hospital and Saint Elizabeths Hospital. Members of the medical profession and interested students are cordially invited to attend. The general secretary is Dr. Herman A. Osgood, 144 Commonwealth Avenue, Boston, Massachusetts, and the local representative is Dr. G. J. P. Barger, of the Medical Society.

The Graduate Nurses Association of the District of Columbia extends a cordial invitation to members of the Medical Society of the District of Columbia to attend their meeting in the Red Cross Auditorium on November 14. Mrs. Alma Scott, Director of Headquarters of the American Nurses Association will speak on "Eight-hour Duty." Discussion will be participated in by a member of the medical profession, a former patient, and representatives of the community and the hospital.

Dr. William P. Herbst was elected to serve as Chairman of the Section on Urology of the American Medical Association.

Dr. John L. DeMayo was elected National Surgeon General of the Veterans of Foreign Wars, at a convention held in Columbus, Ohio, August 26.

Dr. W. Calhoun Stirling, and **Colonel J. E. Ash,** Curator of the Army Medical Museum, recently presented a paper on "Sarcoma of the Prostate: Report of Five Cases," before the American Urological Association at the annual meeting in Quebec, Canada. A scientific exhibit of their cases was also presented.

President Urges Support of Red Cross Roll Call

The annual roll call of the American Red Cross begins on September 26 and continues through October 17. This year I feel the Medical Society of the District of Columbia should do everything possible to make it a success. The American Red Cross is one of the greatest organizations in the world, and the wonderful work it does ties in closely with that of our profession. There is probably no organization in this country that is dearer to the hearts of the people, for it stands for a great deal and in a way represents the soul of this nation.

As President of the Medical Society I personally want to urge each member to join the Red Cross this year so that we can go over 100 per cent.

William J. Mallory, M.D.

Earl Baldwin McKinley, A.B., M.D.

(1894–1938)

Dr. Earl B. McKinley, an Active Member of the Medical Society of the District of Columbia, since March 8, 1932, widely known educator and scientist, was lost aboard the Hawaii Clipper enroute to Manila on July 29. He was born on September 28, 1894, at Emporia, Kansas. Dr. McKinley was Dean of George Washington University School of Medicine, having occupied that post since 1931. He had long been interested in research work and at the time of his death was engaged in a survey for the National Research Council. He was educated at the University of Michigan, Pasteur Institute, and the University of Brussels, Belgium. For a number of years he served in the Philippines as Field Director of the Rockefeller Foundation at Manila. He was also a member of the Advisory Committee on Leprosy to the Governor General of the Philippine Islands. Dr. McKinley served with distinction as the Director of the School of Tropical Medicine at Puerto Rico and on the faculties of the University of Michigan, Baylor University, University of Chicago, and Columbia University. Among the scientific organizations of which he was a member were: American Medical Association, American College of Physicians, American Association of Pathologists and Bacteriologists, American Society for Experimental Pathology, Society of American Bacteriologists, and the American Association for the Advancement of Science.

Dr. McKinley had been active in the Society since becoming associated with the George Washington University School of Medicine. He is survived by his widow, a son, Royce, and a daughter, Janet.

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ASPHYXIA OF THE NEWBORN*

H. R. LITCHFIELD, M.D., AND J. S. BEILLY, M.D.
Brooklyn, N. Y.

The neonatal death rate remains unchanged. Although in recent years there has been a progressive reduction in infant mortality for the first year of life, neonatal deaths for the first two weeks of life have been increasing.†

Dunham,[1] and Tandy[2] recently reported that asphyxia is a dominant cause of stillbirths occurring between 35 weeks of gestation and term. Bundesen[3] had noted a large number of deaths occurring during the first 24 hours of neonatal life; there were twice as many among premature fetuses (69 per cent) as among those born at term (37 per cent). He suggested the need for a continuation of obstetric and pediatric management which would lower neonatal mortality. Prematurity, intracranial hemorrhage and asphyxia remain the chief causes of neonatal mortality.

Asphyxia, especially when prolonged, produces injurious effects upon the nervous system, and the most highly specialized centers, particularly those responsible for the maintenance of life, are damaged first. Consequently, a knowledge of the etiology, prevention and treatment of asphyxia is necessary if we are to decrease the number of stillbirths and to lower neonatal morbidity and mortality.

For a long time the fetus was regarded as being in a state of apnea throughout its intrauterine life, and its respiratory movements were not presumed to begin until birth. Now, however, it is recognized that the human fetus frequently manifests respiratory movements for periods lasting many minutes, and that respiration instead of being initiated at birth really extends far back into embryonic life. Observations, both clinical and experimental, in support of this view have been reported by numerous authors including Schultze,[4] Ahlfeld,[5] Weber,[6] Reifferscheid,[7] and Snyder and Rosenfeld.[8, 9]

Recent observations by Snyder and Rosenfeld,[8, 9] give proof that fetal respiration not only precedes the postnatal function but that asphyxia follows when the fetal respiratory movement is interrupted. The effect of such drugs as ether, paraldehyde, sodium pentobarbital and phenobarbital have been studied by direct observation upon animals; anoxemic states in the mother, induced with various concentrations of anesthetic agents, resulted in depression or cessation of fetal respiratory movements. Hyperventilation, following artificial respiration administered to the mother, produced at first slowing of respiration and subsequently apnea in the fetus. Upon suspension of the artificial respiration after a period of quiescence, the respiratory movements of the fetus were resumed at the usual rate. This observation would indicate that a minimal concentration of carbon dioxide is essential and that excessive amounts will not initiate respiratory function.

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* From the Department of Obstetrics and Pediatrics, Beth-El Hospital, Brooklyn, N. Y.

† Children's Bureau, United States Department of Labor (Special Report, 1937).

Under this new conception, the prenatal respiratory movements cause a tidal flow of amniotic fluid into the lungs, thus affording dilatation of the future air passages. The aspiration of amniotic fluid by the infant during labor is no longer to be considered an accidental complication, but rather the result of fetal respiration. Consequently, if we accept this theory, then respiratory failure of the newborn, asphyxia neonatorum, is due to a suppression or interruption of prenatal respiratory function.

While the efforts of the obstetrician in overcoming neonatal asphyxia heretofore have largely been directed toward the initiation of respiration as quickly as possible following birth, he must now concern himself with preserving the continuity of the fetal respiratory function during parturition. It becomes necessary to consider the various factors that may arise during pregnancy and labor that may adversely influence fetal respiration; among the more important are the use of analgesics and anesthetics to ameliorate the pains of labor, as well as traumatism associated with both long and difficult labors and instrumental delivery.

Advances in our knowledge of asphyxia have followed the introduction of the chemical theory of respiration by Henderson,[10, 11, 12] in America and Haldane[13] in Great Britain. It is now generally accepted that the respiratory function is under the control of a medullary center which is activated by the carbon dioxide of the blood. Thus when the blood carbon dioxide reaches a critical concentration the center is stimulated and respiratory movements result with the inhalation of oxygen and the exhalation of carbon dioxide.

In asphyxia, due to the failure of the respiratory center to respond to the normal stimulus of blood carbon dioxide, there is a progressive accumulation of this gas with a corresponding lowering of oxygen concentration. Thus the longer the asphyxia lasts the more serious it becomes, since the oxygen content of the blood may fall so low as to be beneath the basal metabolism requirements and fatality may result, or at least there may be some permanent impairment of brain function. This concept of oxygen-want as the cause of asphyxia is supported by a preponderance of evidence.

Eastman[14] has shown that under certain conditions nitrous-oxide-oxygen anesthesia administered to the mother during labor produces fetal anoxemia. The fetal anoxemia resulting is relatively greater than in the parturient, and may reach a critical point to cause impairment of fetal respiration or even death.

Mild degrees of anoxemia thus induced increase respiratory movements, accelerate heart rate and increase blood pressure. These reactions presumably are compensatory mechanisms, the object of which is to restore a normal relationship of blood bases. With the intensification of anoxemia, however, the asphyxia becomes increasingly serious, for the pulse rate slows, the blood pressure falls and death from failure of the vital center ensues. With the use of several different analgesic drugs for the alleviation of pain at parturition, Lewis[15] noted that increasing narcosis and asphyxia of the newborn was an accompaniment of trauma from prolonged labor, instrumental or operative delivery.

The futility of the older methods of resuscitation such as "slapping, swinging, tubbing, etc.," are at once obvious. Such vigorous methods not only fail to furnish a rational explanation of their value but they add to the shock, lower body temperature and increase the acidosis. Mouth to mouth breathing, so frequently advocated, is much less effective than commonly believed and even when successful is accompanied by serious drawbacks. Thus Wilson, Torrey and Johnson[16] have shown that the atelectatic lung cannot be opened by gases under pressure in the trachea alone. Even when resuscitation is accomplished by mouth to mouth breathing, not infrequently extensive emphysema follows its use and may cause death even in the absence of other complications; septic pneumonia and lung damage are other serious possible consequences of this method. The mechanical respirator is of little value in the asphyxiated infant, although it may be quite useful in carrying the patient through syncopal periods once respiratory function has been established.

For normal respiration, therefore, both anatomic and physiologic integrity of the respiratory system is necessary. It should be remembered, however, that a peripheral or an obstructive type may occur. Thus, mucous plugs or congenital malformations may prevent the normal exchanges of gases and produce atelectasis just as effectively as failure of the respiratory center. A combination of both centrally and peripherally acting causes may be present.

The classification of asphyxia proposed by Flagg[17] serves well as a guide to the degree of asphyxia and the type of treatment to be employed:

1. *Mild Asphyxia.* The infant resists movements of the head and extremities. Mucous plugs and amniotic fluid fill the mouth and pharynx. The treatment is suction to remove obstructing material and the administration of gas mixture with subsequent response.

2. *Moderate Asphyxia.* Muscle tonus is absent; there is no resistance to opening of mouth. No reflex irritation is induced by aspiration or stimulation of glottis. The treatment is aspiration of mucus and debris from the larynx and trachea by laryngeal intubation or on direct laryngoscopy and insufflation of gas mixture.

3. *Asphyxiated.* The infant does not respond to attempts at resuscitation. The appearance is livid or pallid, there is absence of respiratory movements, and an occasional flicker of the heart impulse may be detected through the chest wall. The upper respiratory tract becomes a collapsed tube. The treatment demands opening the respiratory passages by allowing gas mixtures delivered under measured pressure. This will overcome atelectasis, allow immediate diffusion and absorption of blood gases, relieve right-side heart congestion and improve left-side heart circulation, and cause stimulation of the respiratory center.

In treating asphyxia neonatorum the immediate and first procedure is to aspirate all mucus, debris and amniotic fluid that may obstruct the passageways. For this purpose we employ the method of suction and intubation described by Litchfield and Hardman.[18] Next, the cord is clamped and lobeline injected into the umbilical cord. The child is held with the head downward, and the cord stripped so that the drug is gradually pushed on its way into the general circulation. Immediately after this the patient is laryngoscoped and the air passages insufflated with a mixture of oxygen (93 per cent) and carbon dioxide (7 per cent) under a pressure not exceeding 5 mm. of mercury.

Under this treatment the initiation of respiration is often noted within a few seconds in the asphyxiated newborn. According to our experiences it is best to continue giving the oxygen and carbon dioxide mixture through a face mask depending upon the needs of the case. Treatment should begin without delay, since it sometimes takes only 15 or 20 seconds for lobeline to reach the respiratory center and manifest its activity by producing respiratory movements. The administration of this drug and the insufflation should be timed simultaneously.

This study is concerned chiefly with the central form of asphyxia neonatorum and the use of alpha-lobeline hydrochloride, used intravenously, in its treatment. Asphyxiated infants, particularly those delivered following a difficult or prolonged labor in which lengthy general anesthesia was employed, were selected for study.

We set up a kimographic arrangement with a Lombard recording tambour attached pneumotographically to the newborn infant and the graphs obtained gave us an indication as to the respiratory movements of asphyxiated infants, for comparison with graphs obtained from normal infants (Fig. 1).

Following the injection into the umbilical vein of both "weak" and "strong" solutions of alpha-lobeline, we were impressed with the remarkable stimulation of respiration induced by this drug, and shown by the accompanying graphs.

Alpha-lobeline ($C_{22}H_{27}O_2N$) is the principal alkaloid of Lobelin inflata. According to Sollmann[19] the injection of small doses of this alkaloid sensitizes the respiratory center to carbon dioxide and produces stimulation of the respiration.

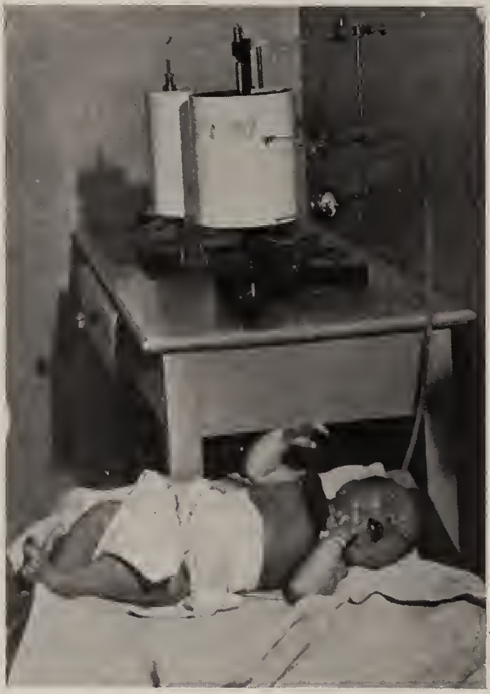

Fig. 1. Method of obtaining respiratory curves

Solis-Cohen and Githens[20] agree that alpha-lobeline is a central stimulant of respiration and regard it as especially valuable in overcoming excessive depression of the respiratory center with morphine, barbiturates and other drugs.

Dreser[21] attributes the stimulation of the respiratory center by lobeline to a paralysis induced by this drug of the endings of the vagus in the lungs, which thus relieves the spasm of smooth muscle and causes a better ventilation of the alveoli.

While the mechanism of alpha-lobeline action is not wholly understood much work has been done upon this subject. Among the outstanding papers that have been published are those by Wilson[22] and his associates. These authors corroborate the conception of Sollmann that alpha-lobeline lowers the threshold of the respiratory center to its normal stimulant, carbon dioxide. Alpha-lobeline hydrochloride when injected into the umbilical vein lowers the threshold of the respiratory center to CO_2 stimulation and is a valuable adjunct in the treatment of asphyxia neonatorum.

ILLUSTRATIVE CASES

Case 1: A premature infant, weighing 3 pounds, 4 ounces, had cyanosis at birth which changed to marked pallor. Maternal medication had been morphine sulfate, $\frac{1}{6}$ grain hypodermically about 3 hours before delivery. The position was L. O. A. Two turns of the cord were around the neck. There was no sign of respiration and no cry. The infant was in a relaxed state, and heartbeats were very feeble. Alpha-lobeline, $\frac{1}{20}$ grain, was injected into the umbilical vein, and the cord was milked toward the infant; oxygen and carbon dioxide were started. Within 15 seconds after the injection there was a gasp with a few deep inspirations. A short period of apnea followed and the respiration was weakly resumed for a short time immediately after the oxygen and carbon dioxide mixture was given through the trachea. However, at the sign of another period of apnea, a second dose, $\frac{3}{20}$ grain, of alpha-lobeline was injected hypodermically, and soon thereafter the respiratory rate became frequent and was reëstablished (Chart 1). The cardiac impulse became visible and stronger. There was a tremendous increase in the amplitude of most of the respirations with extensive excursions of the thoracic wall. The infant was kept warm, and 1 hour later rhythmic breathing continued. A mixture of carbon dioxide (7 per cent) with oxygen (93 per cent) was given to this child p. r. n. over a period of 5 days. The infant was discharged at the end of a month in normal condition.

Case 2: The mother had been in labor for 36 hours, followed by forceps delivery under gas-ether anesthesia. The infant was pallid at birth and refused to breathe spontaneously (Chart 2). The throat was cleared of mucus, and insufflation with oxygen and carbon dioxide was started and adrenalin hydrochloride injected. The child took several gasps but there was no other response and on autopsy atelectatic lung tissue and a large thymus were found.

Case 3: There was a breech presentation. Labor lasted 28 hours. The infant was delivered markedly pallid and did not breathe spontaneously. The cardiac impulse was barely visible. Soon after delivery the infant received $\frac{1}{20}$ grain of

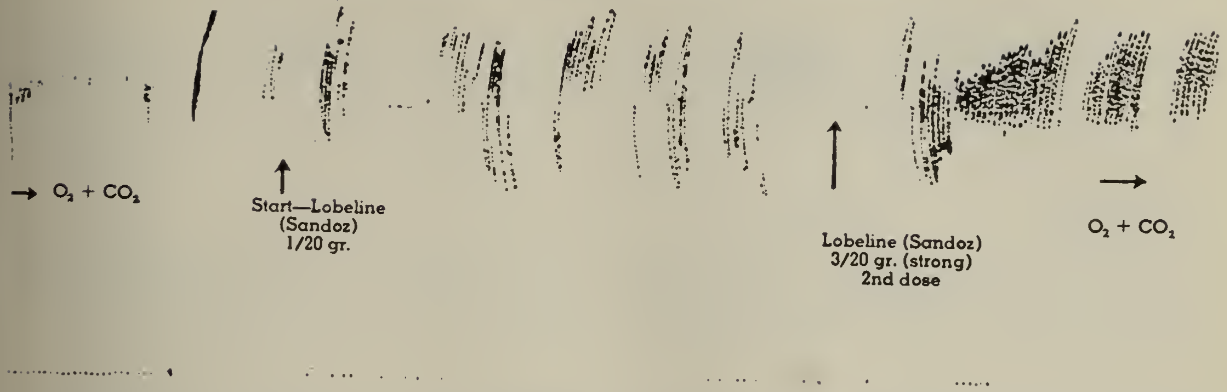

CHART 1. Case 1. Premature 3 lbs. Cyanotic at birth. Respirations irregular. Respiratory tracing—characteristic of prolonged labor. Required 2 doses of Alpha-Lobeline (Sandoz) a weak and strong dose for resuscitation. Intervals of apnea with marked descent of the diaphragm. Rhythm is later established. $O_2 + CO_2$—given within limits of pointed arrows.

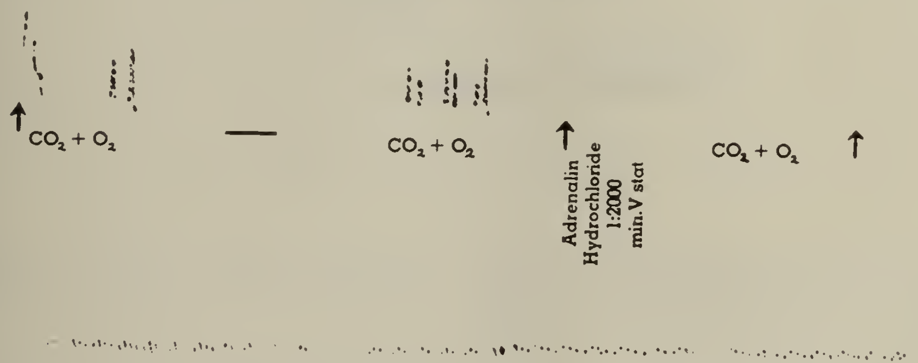

CHART 2. Case 2. Congenital atelectasis—Enlarged thymus, Gas-Ether anesthesia—analgesia—12 hrs. before delivery, morphine $\frac{1}{4}$. Infant respiratory tracing showing $O_2 + CO_2$—given along lines of pointing arrows—adrenalin injected. Infant expired. Time record—$\frac{1}{5}$ sec. intervals.

alpha-lobeline. Within 15 seconds after the injection, rapid but irregular respirations began (Chart 3). There was a period of apnea again, at which time oxygen and carbon dioxide mixture was given directly into the trachea in small amounts. Soon after that the rhythm was reëstablished, both amplitude and rate being in normal relationships.

Case 4: A male infant, weighing 6 pounds, was cyanosed at birth and did not breathe. Immediately on delivery $\frac{3}{20}$ grain of alpha-lobeline was injected directly into the umbilical vein, the throat was cleared of mucus by suction, and oxygen and carbon dioxide mixture was given in small amounts directly into the trachea. Within 20 seconds after the injection of alpha-lobeline respiration started very rapidly, gradually increasing in amplitude (Chart 4). The rhythm was fairly well established for about 1 minute and followed by a period of apnea. Shortly thereafter rhythm was reëstablished. The respirations became deeper, the general tonus of infant increased, and the cardiac impulse grew rapid and strong. The respiratory rate became continuous and there were extensive excursions of the thoracic wall with increase in pulmonary ventilation. The child was put in an incubator at a temperature of 90°F., and oxygen and carbon dioxide mixture was continued throughout most of that day and the following day as well. At the end of 10 days the child was discharged in a normal condition.

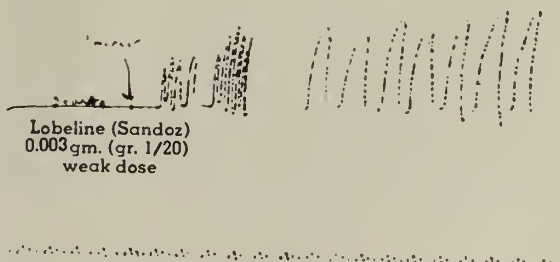

CHART 3. Case 3. Copy of graph showing response to 0.003 gm. (gr. $\frac{1}{20}$) Lobeline (Sandoz). Period of apnea for 30 seconds after this there is partial release of diaphragmatic spasm. Respirations began within 15 seconds after injection, rapid and totally irregular—later rhythm is reestablished with both amplitude and rate in about normal relationship.

Case 5: The mother, a primipara, was in labor 48 hours. The infant did not breathe and was markedly pallid. The cord was cut, the cardiac impulse was very weak, and there was an occasional weak gasp with very shallow respiration.

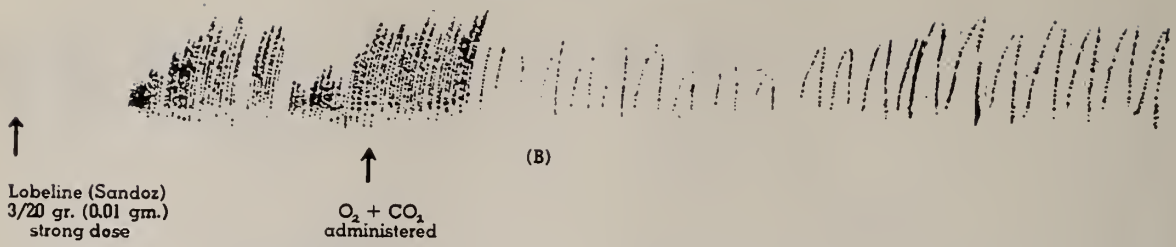

Chart 4. Case 4. Shows resuscitating effect of Lobeline injection—strong dose. In addition $O_2 + CO_2$ was given infant after throat and larynx were cleared of mucus by suction.

(B) A gradual return to normal position—after the drug wears off and respiratory rate becomes regular.

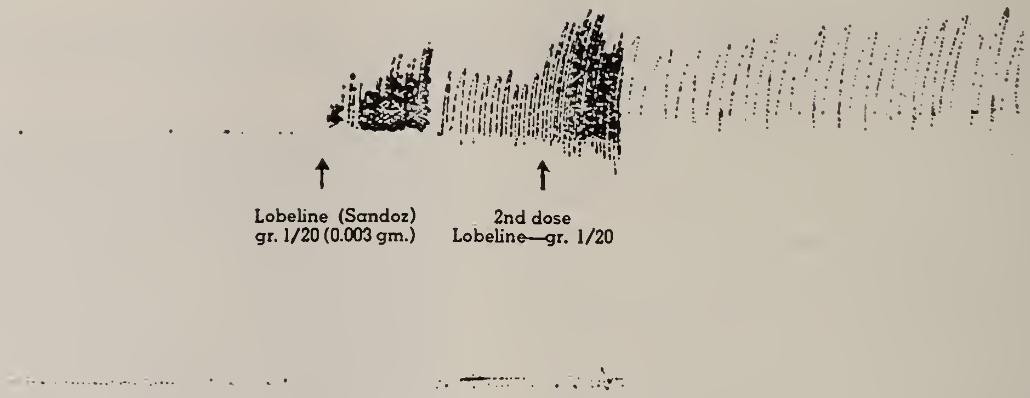

Chart 5. Case 5. Infant's Respiratory Tracing. Point of arrow marks time of injection of weak dose of Alpha-Lobeline (Sandoz). Mucus cleared from throat—$O_2 + CO_2$ given.

Respiratory tracing 1 hr. later—rhythm established.

Alpha-lobeline was injected into the umbilical vein 1 minute after the infant was born. There was an immediate gasp, slight increase of tonus, short apnea, and then a better cardiac impulse. The color improved quickly and the respiratory rate became more regular. The infant was given a second dose of alpha-lobeline when it was thought that the improvement was not as rapid as it should have been. This time there was a marked increase in the rate of the respiratory movements and tremendous increase in their amplitude (Chart 5). One hour later there were still extensive excursions of the thorax and regular rhythmic respiration. The infant was discharged in good condition at the end of 10 days.

Conclusions

1. Formerly the respiratory function was regarded as being initiated at birth, but now there is convincing evidence that respiratory function begins in embryonic life.

2. Asphyxia is the result of arrest or suppression of prenatal respiratory function, rather than the inability to initiate respiration after birth.

3. Asphyxia remains the dominating cause of stillbirths and neonatal morbidity and mortality.

4. Long and difficult labor, or traumatism during delivery, are predetermining factors which influence the degree of narcosis in the newborn and suppression of respiratory function, with use of various analgesics and anesthetic drugs employed to alleviate the pains of labor.

5. Asphyxia neonatorum of the central type may be overcome frequently by injection of alpha-lobeline hydrochloride into the umbilical vein.

6. Alpha-lobeline will lower the threshold of the respiratory center to CO_2 stimulation and is a valuable adjunct in the treatment of asphyxia neonatorum.

7. To reduce the number of stillbirths and to prevent neonatal morbidity and mortality due to asphyxia, the obstetrician must devote his attention to preserving the continuity of the fetal respiratory function during pregnancy and labor and evaluate the several factors concerned at parturition to minimize trauma.

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PROGRESS, SCIENCE AND THE MIND*

A HISTORY OF SAINT ELIZABETHS HOSPITAL

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While it is my purpose in this article to deal with the history of Saint Elizabeths Hospital from the time of its inception to its present progressive expansion, I feel that before proceeding to the subject at issue, some remarks about mental aberration from the twilight mists of antiquity to our current era of scientific research might not be out of place. In those remote centuries of racial childhood, the primitive intellect, awe-struck and mystified by the power of the unknown, saw in the elements the majesty of creation. As imagination soared upon the wings of fancy, the winds and waves, the thundering tempest, the firmament radiant in the sunlight or twinkling with myriad stars under the shadow of moonlight; the earth verdant and the flowers fragrant, all appealed to man in voices of the supernatural, bidding him worship and obey. Thus in the aboriginal heart, before the dawn of reason and truth, superstition and romance gave birth to mythology. The forces of nature personified, man created gods in his own image and likeness, each representing some attribute of the individual or his kind. Disease was dreaded as an expression of heavenly wrath which the pagan priests, with their supposed all-potent spiritual agencies, endeavored to frighten away by charms, incantations, ritualistic ceremonies, or the prophetic voice of the oracle. Gradually, however, through the fog of milleniums, the lamp of empiricism, held aloft by the early philosophers, spread forth the light of knowledge, and astronomy, the oldest of all the sciences, was applied to the practical affairs of life by the Sumarians, a people who flourished about 4000 B. C., even before the advent of the Babylonians. Symbolism, then as now played an important rôle in manneristic production and habit formation, serving its purpose in the general scheme of evolution. The skill of the Egyptians in compounding drugs has been handed down to us by tradition, and the advancement of modern chemistry today stands as a venerable memorial to "Chemi," the Black Land. I-em-hetep (he who cometh in peace), the earliest known physician, was a celebrated practitioner of the third dynasty (4500 B.C.) who was afterwards worshipped at Memphis and in whose honor a temple was erected on the Island of Philae. An inscription on a tomb near the pyramids of Sakarah shows it to be the resting place of a very highly esteemed practitioner who served the fifth dynasty of Pharaohs about 2700 B.C., while the earliest known picture of a surgical operation was found on the doorpost of a tomb in a burial ground near Memphis dating 2500 years before Christ. The ancient Hebrews, looking upon disease as an expression of God's anger, were the original founders of public hygiene, and the Mosaic mandates against vice and uncleanliness were, if history be correct, the beginning of modern medical jurisprudence. The early Hindus excelled in operative surgery, the Chinese were clever at massage and first employed the blind as masseurs, while the Japanese added a striking contribution to therapeutics by originating the use of red hangings as a supposed preventive against the pitting of smallpox. The Greeks and Spartans, we are told, were the first to recognize the value of the surgeon in the military and naval organizations, while Celsus in one of his oldest documents speaks of malarial fever and affections of the mind.

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In the last quarter of the sixth century, B.C., the primitive period ended when Pythagoras established in Croton the school of philosophy, hygiene and mental dietetics with the device "Mens sana in corpore sano." The following century saw Athens resplendent in the glory of Pericles, and Greece, the mother of poetry and art, then witnessed the advent of the Aesclepiades and their most illustrious representative, Hippocrates. Under the régime of the "Father of Medicine" the golden age burst forth, the gods were stripped of their power, and men began to consider disease from the rational viewpoint. The master stroke, however, lay in the inclusion of mental affections with other diseases and the denial of their divine significance. Galen, the last of the great men of the Grecian epoch (born 131, died early in the third century, A.D.), an ardent devotee to the cause of Hippocrates, was one of the chief agents for the transmission to modern times of the knowledge attained by the ancients and during the early days of Christian Rome; his experiments on animals added materially to the study of diseases of the mind. With the passing of the Golden Age, which for 700 years had illuminated the eastern world, there followed fifteen centuries of darkness when the precepts of the masters were forgotten and the insane were looked upon as possessed of devils. Yet amid this gloom of regression and decay, the learned monks and their successors kept alive the dying spark of truth, and toward the latter part of the fifth century, A.D., erected in Jerusalem the first asylum of which we find mention in history. The monks of Saragossa, in the fifteenth century when Spain, then a center of learning, held a prominent place in the European world, advocated the benefits to be derived by exercise and to a certain extent revived the Pythagorean maxim in carrying out the precepts laid down by Plato for the maintenance of health. These rules of hygiene are briefly quoted as follows: "The health of body and soul consists in the perfect equilibrium of their forces. To preserve the health of these two parts both must receive equal exercise. He who devotes himself to study should not neglect the exercise of the body, and he whose chief concern is physical development should also have time for meditation and study. We should imitate nature whose course is always uniform without repetition and without shock. It follows that the best remedy as well as the best purgative is exercise."

With the spread of Christianity throughout the British Isles and other sections of Europe during the Middle Ages, many pilgrimages were made to various noted shrines in England, Scotland and Ireland where miraculous cures were reported in persons suffering from impairment of reason. The Glen-na-Galt, or Valley of the Lunatics, beautifully situated in the county of Kerry, Ireland, was a spot to which it was believed every lunatic would, if left to himself, eventually gravitate and the shattered wits be restored by drinking the cooling waters and eating the cresses that grew beside the spring. In England, during the year 1547, a monastic institution established some 300 years earlier was converted by Henry VIII into an asylum known as Bedlam, but what today is known as the Bethlehem Hospital. The first asylum in that country, however, in which curative principles were distinctly discernible was Saint Luke's in London, erected by subscription in 1751, while in Ireland the first institution founded for a similar purpose by Dean Swift was known as Saint Patricks, erected in 1745. The asylum at York later was opened by the Society of Friends in 1796 as a retreat where humane treatment was exercised; and in 1792 Phillippe Pinel became the Chief Physician of the Bicetre, an institution for men in Paris, being afterwards made Chief Physician of La Salpetriere, an institution for women. Dr. Pinel through his herculean labors was undoubtedly responsible for the reformations which took place in this branch of science, as he treated mental disorder by justice, kindness and humanitarian methods.

The initial point of hospital treatment for the insane in this country was in 1750 when a small private dwelling situated in the "Province of Pennsylvania" was converted into an institution receiving its support from subscriptions and charitable donations. In 1773 the first state asylum was erected at Williamsburg, Virginia, and supplied the wants of Kentucky which had not then been made a state. On October 16, 1844, the 13 gentlemen who founded the association of Medical Superintendents of American Institutions for the Insane met at Jones' Hotel in Philadelphia, and although that famous hostelry has long since given place to business demands, the association has been growing in numbers during the years, being now recognized as the American Psychiatric Association.

Since the work and study which is being carried on in modern hospitals that harbor mental patients is practically identical, in the remaining paragraphs of this article I shall confine myself to the history and advancement along scientific and other lines made at Saint Elizabeths Hospital; but before proceeding I must express my gratitude to Mr. Alvah Godding, whose kindness and courtesy in furnishing me with abstracts from the records and reports of his father, Dr. W. W. Godding, have added valuable data, bringing also to the mind in a beautiful romance, the legend of Saint Elizabeth. "As the thirteenth century recedes before us, the story of Saint Elizabeth of Hungary comes more and more to symbolize the divine healer of the poor and outcast to the hearts of men. The legends which, coming out of that twilight century, cluster around that woman's life who passed, at the age of 24, from penance and seeming madness to the aureole and the life beyond, are redolent with the compassion that is touched with the feeling of our infirmities. The mantle torn off that the beggar might be clothed; the loaves for the poor hidden in her vest, that rudely torn aside, disclosed a lap of roses; the washing of the beggar's feet that gave a theme and immortal fame to Murillo, the leprous child laid upon her own bed, and when they looked, the Christ child was in its stead, what fitter saint, what better name, than Saint Elizabeth to symbolize the loving kindness that should be extended here." (Dr. W. W. Godding.) Thus in a brief yet elegant word picture, the former Superintendent lays before us the virtuous life of one whose idealized head, engraved after the painting by the great Spanish artist, adorns the wall of our medical library.[1] The vast reservation that is now Saint Elizabeths Hospital, we are told, has taken its name from that of the original grant of land ceded to the first Catholic settlers of Maryland who sailed up the Potomac in the "Ark" and the "Dove," their "Mayflower" and "Speedwell." As the names of the saints were, and to a certain extent are today household words among the people of "Mary-Land," it is easy to see why they should have named the first island they touched "Saint Clements," the little river they entered "Saint George," the mainland where they disembarked "Saint Mary's" (as Saint Mary's it remains today). Furthermore, one may also see why the particular tract which constitutes the hospital site on the southern bank of the eastern branch of the stream was placed under the patronage of an honored celestial guardian, in this case Saint Elizabeth; and although the present parcel of ground is much less than the area given to the early colonists, the name of the sponsor still hovers about its ivy-covered walls in fragrant memory of those who brought it into being.[2]

It might be of some interest, however, to state that information from the Maryland Historical Society shows that William Bladen (1671–1717) who held many offices under the Colonial government lived (1690–1695) on Saint Elizabeth Manor, Saint Mary's County, Maryland, an estate of about 2,000 acres originally patented by Thomas Cornwaleys in the year 1639.[3a] Information from the land commission office, State of Maryland, however, indicates that "the tract of land on which Saint Elizabeths Hospital is situated was called Gesbrough," 850 acres being surveyed and patented to Thomas Dent, September 4, 1663, lying then in Charles County, later in Prince George's and now in the District of Columbia on the east side of the Anacostia River, in a branch of the said river called the Eastern Branch.[3b] The name Anacostia is derived from Nacotchtank chief of the Nachatank Indians, Nacotchtank, Nacostine, Anacostine, Anacostans—Anaquash (e) tan (i) k, meaning a town of traders.[4] In 1865 it was called Uniontown and in 1869 again Anacostia.[5]

The tract called Saint Elizabeths, 1,430 acres, is to the south of Oxen Run and could not (according to above authority) be the grant on which the Hospital is situated.[3b] In an item from the "Washington Times," January 18, 1903, a full page article entitled, "Where the Government Cares for Unfortunates" (author and his authority unknown), we find the following: "The Jesuit priests who accompanied the Calverts to the New World named the beautiful and elevated spots along the Potomac in honor of their favorite saints. When nearing the yet unborn Capital of the United States, these missionaries, in a spirit of prophecy called the splendid tract, later the home of the Blagdens, after the devout Hungarian Princess who made lepers, paupers, and the insane, her special care. As generations passed away, the land changed hands several times, but the name remained and then, as now, was known as "Saint Elizabeth."[6]

In an item obtained from the Maps Division,[3c] Library of Congress, Washington, D. C., I learned that the tract comprising 600 acres known as Saint Elizabeth was patented to John Charman in 1662 and in 1695 was the property of one John Addison. These data were obtained from an unpublished map compiled by Dr. Henry J. Berkley, covering that part of the former Prince Georges County, Maryland, that is now included within the District of Columbia, for the period of 1658 to 1720. The parcel of land[2] upon which Saint Elizabeths Hospital now stands covers four tracts of ground. Within this area are the Blagden Farm of about 195 acres, the Shepard Farm, where the present "Richardson Group" of buildings is located, named after the third Superintendent, Dr. Richardson, and the Stevens Farm, a plot of about 60 acres situated something like a mile south of the principal portion of the Institution, being called from its donor, the Honorable Thaddeus Stevens. It has good soil and is devoted mostly to agricultural purposes. About 5 miles away in a southerly direction on the eastern shore of the Potomac and directly opposite the quaint little city of Alexandria, lies Godding Croft, a farm of about 350 acres, where to this day a small colony of patients work the farm under a competent manager.[2] Standing on the veranda of the manor house on this farm, one secures an excellent view of the river, reflecting the surrounding landscape in its mirror-like surface as it winds its way to the Chesapeake. Perhaps before passing, however, it might be of some interest to note that in 1608 the first map made by Captain John Smith spelled out the name Patawomeck, which quite evidently was of Indian origin. In 1610 the stream was called Elizabeth River, after the princess of that name, while in 1651 on another map it is designated as the Maryland River. Tooker in his studies of Indian names identifies the term "Patow-om-eke" meaning "to bring again, they go and come, traveling traders or peddler." The word, Potomac, has been used as such for the past 100 years.

As to the origin and foundation of this vast plant, Saint Elizabeths Hospital, which today is known throughout almost the entire civilized world, we learn that Miss Dorothea L. Dix in 1852 had a bill introduced before Congress for the establishment of a "Hospital for the Insane of the Army and Navy of the United States," and in August of that year $100,000.00 was appropriated. Of this amount $27,000.00 was used in purchasing the Blagden Farm or main tract of ground located on the heights overlooking Uniontown or what is now known as Anacostia.

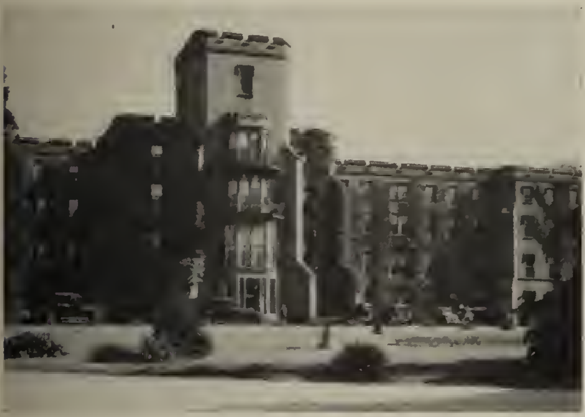

FIG. 1. Center Building, Saint Elizabeths Hospital

The main or "Old Center" building (Fig. 1), which constitutes the nucleus about which the more modern structures are grouped, was begun in 1853, receiving patients as early as January 15, 1855; although the organic act creating the Institution and outlining the duties of its officers, as also providing for the admission of various classes of insane patients, was not approved until March 3, 1855. The structure was completed in 1860, but Dr. Charles H. Nichols had been appointed the first superintendent at the instigation of Miss Dix, his term of office being from October, 1852, to 1877, at which time he resigned. The building was constructed from bricks made on the reservation and in architectural type is a modification of the Kirkbride plan, each wing receding from the center in echelon. The structure itself was erected in the collegiate Gothic style and very shortly not only began receiving patients from the Army and Navy but from the District of Columbia as well; furthermore, it maintained quarters for all of its employees. In 1861 another building,[7] which had been constructed and known as West Lodge, was set aside for the wounded seamen of the Chesapeake and Potomac Fleets, while a little later a few of the wards in the main building were used for the same purpose. In 1863 also, certain rooms in the hospital were reserved for the manufacture of artificial legs, and soldiers who had lost a limb by amputation in any one of the District or neighboring hospitals might, if they wished, be transferred to Saint Elizabeths as soon as the stump had healed sufficiently to be fitted. This action was taken in January of the above year at the request of the Surgeon General of the Army.

I am perhaps rather tardy in stating also that in 1855–1856 a building was opened for the colored insane which the superintendent in his report said was the "first and only provision for the African insane made in any part of the world." In 1862, it is interesting to note that the annual report showed that "The General and Quarantine Naval Hospital with 70 beds in charge of Surgeon N. Pinkney of the Navy and the General Army Hospital of 250 beds in charge of the medical officer of the Government Hospital for the Insane have been in successful operation during all the past year." In the following year it was again noted that "The Government Hospital for the Insane, with 250 beds known as Saint Elizabeths Hospital and the separate General and Quarantine Naval Hospitals with 60 beds in both, all free tenants of the Institution under our supervision are maintained in full activity and usefulness." In these paragraphs, it should be observed, is the first mention of the name Saint Elizabeths as applied to the hospital. Although Saint Elizabeths' tract (Dr. William A. White) has been known ever since the settlement of the country, the application of the name to the hospital was the result of the disinclination of many of the soldiers who were not insane to have the Institution in which they were temporarily resident called the Government Hospital for the Insane. This especially applied to the men who were getting their artificial limbs adjusted, and who did not wish to be considered as patients.

Dr. Nichols resigned in 1877 to take charge of the Bloomingdale Hospital for the Insane in New York, after serving the Institution for practically 25 years, following the passage of the first appropriation act in 1852. From the time the act was passed, however, to the opening of the Hospital in January, 1855, he selected the sites for the buildings, planned and supervised construction of the original edifice and its successive additions, keeping in touch with everything in general, down to the time of his resignation. Being a Quaker by religion he brought to his work the humanitarian principles of that sect which have been closely identified with the care of the insane in this country.

He was succeeded by Dr. W. W. Godding, who had been appointed on the hospital staff some time in 1863, coming from Fitchburg, Massachusetts. Previous to his connection with the Government Hospital for the Insane, however, he had been associated with the New Hampshire Hospital for the Insane at Concord, being later appointed Superintendent of the Taunton State Hospital in Massachusetts, where he remained a number of years, resigning to come to Washington. During his incumbency of 22 years the Institution grew rapidly. When he took charge in 1877 he found only 6 buildings, but during his administration he erected 22 more aside from various extensions and additions. The larger structures were the Relief and Home Buildings, the Howard Hall for the criminal insane, so-called after Howard, the prison reformer, the Oaks Building for epileptic insane, the Toner Building, an infirmary, a large refectory, a power house with electrical installations and the Allison buildings. He also added over 500 acres to the hospital grounds, including Godding Croft, as above mentioned, on the Potomac. When he took charge there were 765 patients in the hospital, and when he died May 6, 1899, he left a population of 1,967. In 1877 he found an employee personnel of 227, he left an organization of 540, or a total of over 2,500 patients and employees. During this period of growth the appropriation for the support of the institution trebled, and at the time of his death he was annually disbursing over $500,000.00.

This institution is one of the earliest in the country to recognize the value of scientific work and one of the first to appoint a pathologist. Dr. T. W. Blackburn took up the position in the fiscal year, 1883–1884. His work became well known, and at the time of his death, June 18, 1911, he had established for himself a national reputation among workers in his field.

The hospital was one of the first also to take up the systematic application of hydrotherapeutic measures in the treatment of the insane, and the active man on the staff in this work was Dr. G. W. Foster, who had charge of the Toner Infirmary. The report for 1895–1896 showed that during the previous 2 years he had been actively engaged in using hydrotherapeutic measures and had made special application of this form of treatment for general paresis. Subsequent reports made considerable mention of this treatment, describing both Dr. Foster's methods and his conclusions. During the first 3 years no special hydrotherapeutic apparatus was installed, the treatment consisting mostly of the application of cold packs accompanied by cold to the head in the form of wet towels or ice packs. During the fiscal year, 1897–1898, a complete hydrotherapeutic outfit was installed, the form of apparatus being that designed by D. S. Baruch in New York City.

Dr. Godding died in office, May 6, 1899, and during the interval between his death and the appointment of a successor, Dr. A. H. Whitmer became acting superintendent. During his short period of service, the school for instruction in nursing which had been established in 1894 was reorganized and extended, and arrangements were made to give a certificate after the completion of a two-years' course with promotion and increase in pay. Dr. Whitmer died January 18, 1900, but on October 17, 1899, Dr. A. B. Richardson had been appointed Superintendent as Dr. Godding's successor. He came from Ohio where he had gained much experience as an administrator, having only shortly before his arrival in Washington built the Massillon State Hospital. When he took charge here, a survey of the situation showed the buildings were calculated to accommodate properly a patient population not in excess of 1,600, while the actual personnel on June 30, 1900, was 2,076, an excess of 476 beyond the capacity. This overcrowded state was reported to Congress, which authorized an extension of the hospital to 1,000 additional patients, limiting the cost of such extension to $975,000.00, which, however, resulted in the construction of 12 structures, including 2 psychopathic reception buildings and others for various purposes, such as 1 building each for disturbed men and women, an infirmary and 6 cottages. In addition, a cold storage building, storehouse, kitchen for the Detached Group, a new stable and a warehouse were erected. Artesian wells were bored to supply water for the hospital, and a railroad switch extending from the Baltimore and Ohio tracks to the power house was built. Shortly afterwards (1902) a new Administration Building (Fig. 2) and a kitchen building together with a central power heating and lighting plant were erected.

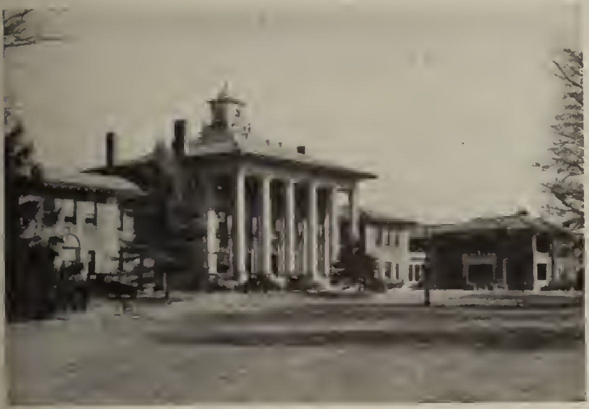

Fig. 2. Administration Building, Saint Elizabeths Hospital

Dr. Richardson died quite suddenly during the midst of his work from a stroke of apoplexy, before his extension program had been completed, on June 27, 1903, and was succeeded by Dr. William A. White who assumed his incumbency on October 3, 1903. During the intervening 3 months between Dr. Richardson's death and the appointment of the new superintendent, however, Dr. Maurice J. Stack, First Assistant Physician, was in charge. On October 1, 1903, there were 2,203 patients in the hospital and 15 buildings were under construction yet no one of them had been finished. The work of building large additions, reclassifying the population, occupying new buildings, shifting the center of administration and getting the new power and heating plant in operation, devolved upon the incoming superintendent. The financial department was entirely revised, the different groups of mechanics were collected under heads and subheads, and in fact the whole scheme of things was entirely revised. In 1916 there were about 2,946 patients, and in that year Dr. White reported an expenditure of $750,000.00. The institution had grown from 63 patients on 195 acres of land to 124 buildings (February 28, 1928) with 4,000 patients and 1,200 employees on several plots of ground comprising 800 acres. In 1928 also an appropriation was obtained for $875,000.00 for a Medical and Surgical Building (completed in 1929) with all modern appliances including X-ray apparatus, violet-ray and quartz machines, diathermy apparatus, dental, eye, ear, nose, throat, antiluetic and minor surgical clinics together with a modern up-to-date operating room for major surgery (Fig. 3). Psychotherapy and more recently insulin and metrazol therapy are offered to our patients, together with malarial inoculation in cases of general paresis.

The institution has one of the largest accredited grades of Holstein herds in the country which furnishes about 700 gallons of tuberculin-pure milk each day. The hospital now has 9 wells from which it derives artesian water and a system for fire-fighting operated by 2 high pressure pumps capable of producing 1,000 gallons per minute, whereby 4 streams of water can be thrown over the highest building on the grounds.

The lawns here have 170 species of trees, some of which are natives of this country, while others come from the Caucasus Mountains, Greece, China, Japan, Bulgaria, India and Persia. Even the redwood of California may be found on the reservation. The hospital[1] is beautifully situated on an elevation overlooking the Potomac and the National Capital. From a bluff arising some distance from the river, on what is known as "the point," a panoramic view of the city is obtained, wherein the Capitol itself surmounted by the bronze statue of freedom, the Library of Congress, and the Washington Monument, towering to a height of some 555 feet, like Cleopatra's needle of old, and many other buildings, stand out in relief against the background of the sky. Within these grounds, carpeted by velvety lawns of emerald green, the hand of the artist has called from nature her fullest beauty. Here one may wander among gorgeous beds of poinsettia, tulips, pansies and fleur-de-lis arranged in geometric designs, or drink in the perfume of magnolia blossoms while mother nature is smiling in the voice of summer.

It is interesting to note that quarters in the institution were always reserved for Miss Dorothea L. Dix who drew up with her own pen the outlines of the organic act establishing its being, and the little desk upon which she drew the original act still stands in the board room of the main or Old Center Building. Miss Dix[8] died at Trenton, New Jersey, on July 17, 1887, and as stated by Francis Tiffany Houghton, in his Life of Dorothea Lynde Dix, "having known the labor and sorrow of more than four-score years, she was a woman, who with instincts all womanly, boldly led the way for all men to follow her." She was born in Maine, April 4, 1802, and, if legend be correct, led a childhood life amid the chilling air of New England puritanism. Later she taught school in order to support herself, her mother and brothers, until her health gave way and she spent a winter in the West Indies with the family of a clergyman. After numerous relapses she improved to some extent, and in the winter of 1837 she came to Washington, D. C. Her great work, the mission of her life, began in 1841, with her two years' inspection of the insane, in the prisons and almshouses of Massachusetts, as a result of which a bill was passed by the legislature for additional hospital accommodations for 200 insane. She then made a pilgrimage not only throughout the United States and Canada but throughout the world, visiting jails, penitentiaries, houses of correction, hospitals and houses of refuge. She made careful studies of conditions in each state, made stirring appeals to legislatures, and the power she exercised over governors and administrative bodies was everywhere felt. At the

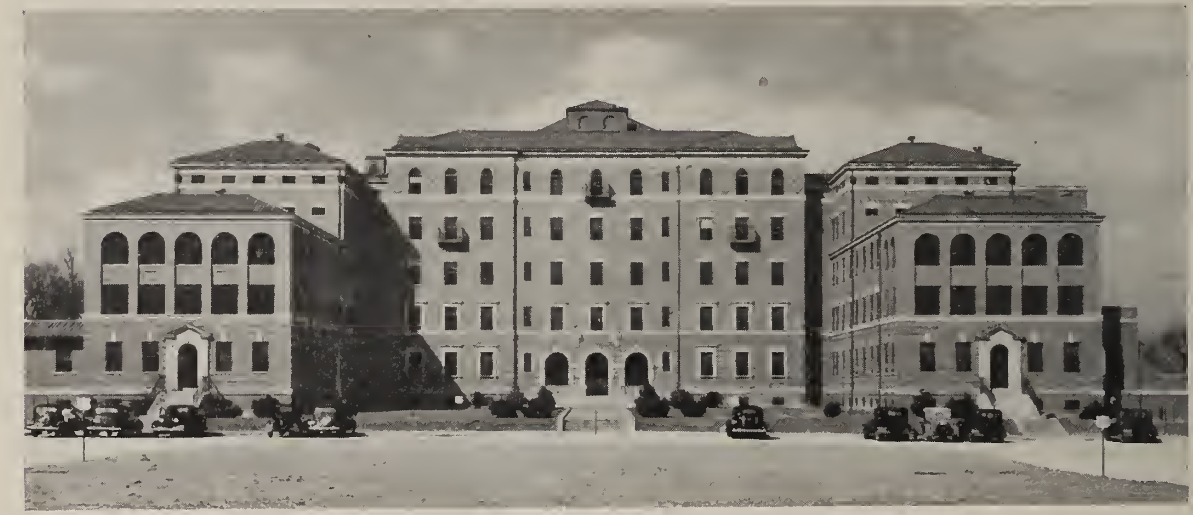

Fig. 3. Medical and Surgical Building, Saint Elizabeths Hospital

magic of her words, hospitals sprang into existence, more than 20 institutions for the insane being created to attest the completeness of her work. She changed the conditions of a whole class of humanity's outcasts, substituting humane care for loathsome neglect of the pauper insane of a whole continent. In 1861, when the war broke out, Abraham Lincoln gave her charge of the female nurses over sick and wounded soldiers of the Northern Army, and at Saint Elizabeths this President made frequent visits to these men, many of whom now lie sleeping in the hospital cemetery. When the war was over, Secretary Stanton sent her a standard of colors which hang now in the Harvard Memorial Hall. After the war also, she went through the South, where institutions had become impoverished, visiting the Pacific Coast and even Japan, where 2 hospitals sprang from her inspiration. Miss Dix was a woman of large features, firm mouth, steel blue eyes, with something of sadness in them, and brown hair, which even with advancing age showed not a trace of gray. Her last journey was from Saint Elizabeths Hospital to Trenton, New Jersey, where she developed pneumonia, and although she survived the attack, she was never able to leave her room but for 5 years slowly faded away; and at the close of May, 1887, Dr. Godding paid his last visit to her.

Since her death, however, the work of Miss Dix has in truth lived after her. The institution which she founded in years gone by has today both wide ramifications and a national reputation. It receives patients not only from the military organizations in the United States and its possessions, but the scientific work carried on within its domain has had much to do with the modification of opinion regarding the insane in the District of Columbia, and in fact throughout the civilized earth. The staff of this hospital has been very active along its chosen lines, numerous writings of its members are found scattered throughout the literature of the medical world, and original publications from the professional personnel have appeared not only in this country but in Spain, Italy, Germany and France. Many persons outstanding in public, civil and military circles have been connected with the board of visitors, while a number of buildings on this reservation have been named after prominent men, such as Howard Hall (now called the West Lodge Service), Garfield, Dawes, Atkins Hall and Toner, the last being called after a gentleman who had been an active member of the board of visitors for more than 20 years, having also acted as its president for at least 13 years.

The present medical library in the administration building contains a full set of the index of the Surgeon General's Library and a duplicate card in its index of every medical book in the Library of Congress, which together with the Index Medicus gives a complete catalogue of practically all the medical literature of the world. In addition the hospital subscribes to about 40 of the leading journals dealing with psychiatry and related subjects.

Duplicate records here are kept of all cases, and each record contains as complete a history as is possible to obtain, all laboratory and X-ray reports together with a photograph of the patient and any other data of value. Not only are various forms of occupation offered to our patients, but every known medical, surgical or special form of therapy the case may require is placed at their disposal. A high standard of cleanliness is required here, and rigorous steps are at all times taken to avoid or stamp out any form of infection or contagion. Classes for attendants, courses for nurses and internships for young physicians raise the standard of efficiency, while individual instruction tends to promote a better type of service. Movies, dances and entertainments during the fall, winter and spring seasons are given to our inmates, while in summer band concerts, rides and other diversions take their place. Theater parties in the city are offered to those suitable, every effort being put forth to awaken interest and promote recovery.

On March 7, 1937, not only this institution, but the medical profession and society at large, indeed, suffered a great loss by the death of Dr. White, who aside from being a leader in scientific fields was a man respected and admired by all who knew him. After his demise Dr. R. W.

Hall acted as chief executive until our present Superintendent, Dr. Winfred Overholser, assumed his incumbency on October 4 of that year. Dr. Overholser bears an enviable reputation not only as a teacher, a psychiatrist and an administrator of recognized ability, but he is also held in high esteem by his colleagues, friends and professional associates.

Some idea of the growth of Saint Elizabeths may be gained when I say that on April 21, 1937, the number of buildings on the reservation was 138, the number of patients 5,609 (including 2,836 white male, 882 colored male, 1,182 white female and 709 colored female), while today (May 13, 1938) the patient personnel totals 5,953. From 1932 to 1936 the admissions averaged from 824 to 925 per annum, while the discharge rate varied from 396 to 582 and the death rate from 248 to 304. Ninety per cent of all cases who die here receive a postmortem examination by written permission from relatives, while the percentage of yearly recoveries is from 18 to 20. The employee personnel on the reservation is about 1,700, while the nurses on ward service as a rule reach the 1,000 mark, 55 of whom are registered. A 3-year course of instruction is open for those who are qualified and so desire, yet applicants come for from 3 months to 1 year of postgraduate work and affiliates from other hospitals are often among our midst.

Patients are received not only from the District of Columbia, but from the Veterans Administration, Indian Bureau, United States Soldiers' Home, Public Health Service, Army, Navy, and the Federal Penitentiaries, the appropriations set aside for their maintenance being amply sufficient for a comfortable existence. Furthermore, many draw regular pension allowance, retired or retainer pay, some have accumulated funds before and after arrival, while the Red Cross is ever ready and on the alert to arrange for entertainment, gather desired data and assist in procuring pensions for those entitled.

There are approximately 60 per cent dementia praecox cases here, while the remaining 40 per cent is made up of other forms of mental aberration. We have as a rule 120 tuberculous patients, including white and colored male and female and 10 per cent of our patients suffer from general paresis. Thirty per cent of these latter cases are discharged as recovered, 30 per cent as improved, 30 per cent remain stationary and 10 per cent unimproved.

In closing, I quote the following rules laid down by Dr. Godding and which are still being held as ideal for the guidance of employees on this reservation.

Things to be Remembered

1. He who cannot govern himself is not fit to govern others.
2. Kind words cost nothing.
3. The ward is never to be left without an attendant.
4. The attendant's place is among his patients.
5. He is a poor workman who has no pride in his work.
6. Cleanliness is akin to godliness.
7. Nothing is clean enough if it can be made cleaner.
8. Occupation is the beginning of cure.
9. You can lead where you cannot drive.
10. Strive to be quiet and to mind your own business.
11. The law of kindness will be subject to no exception here.
12. Whatsoever ye would that men should do to you, do ye even so to them.

Perhaps we also as physicians, whose duty it is to care for the mentally ill, might, in the practice of our chosen calling, receive some inspiration from the words of Voltaire, who has reminded us that—

> Nothing is more estimable than a physician
> Who having studied nature from his youth,
> Knows the properties of the human body,
> The disease which assails it,
> The remedies which will benefit it,
> Exercises his art with caution and
> Pays equal attention to the rich and poor.

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CRANIAL OSTEOMYELITIS*

REPORT OF TWO UNUSUAL CASES

Joseph Rose, M.D., M. M. Schapiro,† and Edward P. McLarney, M.D.
Washington

Osteomyelitis must have occurred before the eighteenth century, but it was Pott[1] who in 1768 first adequately described the condition and Chassignac[2] who in 1859 recognized it as a true bone disease. Osteomyelitis of the skull following injury is rare. On the other hand, cases due to other causes, especially to disease of the accessory nasal sinuses, have increased in number. Wilensky[3] has summarized the published data and has come to the conclusion that the number of cases of cranial osteomyelitis now encountered is small and possibly will grow smaller owing to the greater knowledge of prophylaxis, especially in the care of the etiologic factors in the accessory nasal sinuses and in the otologic apparatus.

The commonest location for the development of osteomyelitis of the skull is either the frontal or parietotemporal area. Wilensky's comprehensive review of the literature failed to reveal any cases of osteomyelitis following infection of the maxilla or the otologic apparatus. We, therefore, feel fully justified in reporting as unique a case of osteomyelitis following a maxillary infection and one following a middle-ear infection.

Case 1: P. C., a white boy, aged 7 years, was admitted on July 1, 1936, to Children's Hospital, Washington, D. C., with a chief complaint of headache accompanied by chills and fever. The following day a slight swelling about the left eye appeared. By the morning of July 3 the left eye was swollen shut and there was edema involving the entire face, left lip and cheek. The original diagnosis was acute sinusitis and cellulitis.

On July 4 radical antrum puncture was performed. An opening was made through the nose as well as the canine fossa. The patient was extremely toxic. The next day a consultation was held and the following annotations to the record made: "The child is profoundly toxic and restless. Bloody pus is draining from an opening in the canine fossa and from the intranasal opening in the left maxillary sinus. There is considerable cellulitis around the soft tissue of this region but no crepitus. There is no evidence of cerebral irritation. There is edema of the eyelids, but no evidence of abscess extending into the orbit. Drainage is apparently sufficient at present, but if more be required advise packing the antral cavity. Suggest transfusion and forcing fluids."

On July 5 the temperature rose to 106.6°F., and for the next 10 days ranged between 102°F. and 105°F. Blood transfusions and glucose solution were given daily. Numerous blood cultures were taken, several showing Staphylococcus albus. A course of X-ray treatment to the affected area was given, but no improvement was noted.

On July 10 a spontaneous opening was noted about the edge of the lower left eyelid discharging a bloody material. Later that day this opening was enlarged and several teeth extracted.

Early on July 16 the patient complained of pains in the left ankle. An X-ray film taken shortly thereafter showed complete destruction of the left scaphoid bone. The entire leg was immediately immobilized by the application of a cast. At this time the diagnosis was osteomyelitis of the scaphoid.

A roentgenogram of the chest made the same day showed an area of infiltration about 0.5 by 1 cm. in the first interspace anteriorly on the left side at the periphery and another area of infiltration in the third left interspace anteriorly. The possibility of tuberculous infection was considered. Further examination of the chest on July 24 showed progressive increase in size of the nodular areas which were now diagnosed as metastatic abscesses from the sinusitis. X-ray therapy to the chest was advised and instituted.

On August 11 the patient was again taken to the operating room for incision and curettement of the left maxillary bone. On examining the left orbital and malar regions it was found that the orbital process of the maxilla had become a sequestrum and therefore was removed. Another sequestrum in the orbital process of the zygomatic was also removed. A definite diagnosis of osteomyelitis was now made.

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* Reported by courtesy of Frank Leech, M.D., formerly Chairman, Medical Staff, Children's Hospital.

† Senior Medical Student, George Washington University School of Medicine.

The cast from the leg was removed on August 28 and the entire extremity was found to be red, hot and tender. The edema of the eye was disappearing. On August 29 the patient was discharged as improved. A recent report from the attending physician indicates that the boy has not entirely recovered but is steadily improving.

Case 2: B. J. H., a colored girl, aged 7 months, was admitted to Children's Hospital, Washington, D. C., with a chief complaint of a discharge from the left ear of 3 days' duration. When seen at the clinic there was no evidence of discharge, but there was a prominent swelling behind the left ear. On recommendation of the examining physician she was admitted to the hospital on January 14 with the temporary diagnosis of subperiosteal abscess arising from infection in the left ear.

The physical examination was essentially negative except for the swelling in the left post-auricular area. The fontanelles were still open. The cervical glands were slightly palpable. There was an umbilical hernia of moderate size. The rectal temperature was 100° F.

X-ray examination of the mastoids showed that the right was clear and the left so clouded as to prevent visualization of the cell walls. The right ear showed some congestion with slight bulging of the membrane; there was no evidence of draining sinus in the left ear. The diagnosis was now acute bilateral otitis media with left suppurative mastoiditis and subperiosteal abscess.

On January 17 the temperature rose to 102°F. and the next day a mastoidectomy was performed. An extensive area of cranial osteomyelitis was found. The postauricular abscess was incised and found to contain approximately a liter of pus. The entire mastoid cortex and antrum were necrotic and contained pus and dirty granulations. The dural plate about 5 cm. superiorly, anteriorly and posteriorly was also necrotic with the dura dirty and gray. The edge of the diseased bone apparently reached anteriorly but not superiorly. The operation was stopped at this point because of the poor condition of the patient.

Culture of the pus from the left mastoid cavity revealed a pure growth of Streptococcus hemolyticus.

On return from the operating room the patient was in a condition of shock and the resident was unable to palpate the radial pulses; the respirations were fast and irregular. She was immediately given 200 cc. of 5 per cent glucose solution intravenously. Later that day 150 cc. of blood was given, and this was repeated at daily intervals. The convalescence was stormy. In February static lobar pneumonia of the right upper lobe developed from which the patient made an uneventful recovery.

The affected cranial bones showed little evidence of healing for several months until the early part of April of the same year. On May 9 the patient developed another acute respiratory infection in the upper left lobe, with recovery. About July 8 a small scalp abscess was noted in the region of the previous osteomyelitis (Fig. 1). A roentgenogram on that date showed rarefaction of the squamous portion of the left temporal bone giving a moth-eaten appearance to the part. There was also a rarefied area in the occipital bone. This area was incised and drained on July 11; no sequestra were found. The patient made an uneventful recovery and was discharged on August 25 with the scalp completely healed.

Most cases of cranial osteomyelitis result from the spontaneous extension of the inflammatory process from an infection in the soft parts, in the superior maxilla, in the accessory nasal sinuses or in the otologic apparatus. The first case reported here may be added to McKenzie's record of 3 cases of osteomyelitis of the antrum.[4] Whether the osteomyelitis was present unrecognized from the onset or whether it followed the radical antrum operation is a moot question. The prevalent opinion among otolaryngologists is that while osteomyelitis of the skull is an uncommon spontaneous complication of nasal accessory sinus disease, it is one of the commonest sequelae of the operation for the cure of the latter. Among the 16 cases quoted by Gerber[5] osteomyelitis of the skull followed some operation on the nasal accessory sinuses 10 times. Extension of infection from the superior maxilla into the cranial bones seems to be rather rare.

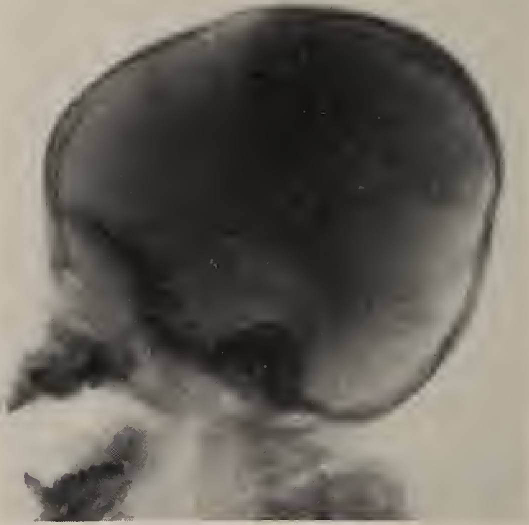

Fig. 1. Case 2. Rarefaction of squamous portion of left temporal bone, July 8, 1936

There is little in the literature on cranial osteomyelitis following middle-ear and mastoid disease, indicating that only a small number of cases of osteomyelitis follow an otologic infection. Boyd-Snee[6] reported 266 cases of osteomyelitis of the temporal bone with the salient conclusions that it was always associated with or is an exacerbation of a middle-ear infection and that a streptococcus usually is the invading organism. Such an osteomyelitis of the skull is rarer than the same complication after nasal accessory sinus disease.

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THE BARIUM ENEMA AS THE MOST ACCURATE PROCEDURE IN THE DIAGNOSIS OF PATHOLOGY OF THE COLON*

Claude Moore, M.D.
Washington

Because of the stress and strain of modern existence, complaints of the gastro-intestinal system due to functional conditions are markedly on the increase. An ever-increasing group of individuals are having abdominal pain with tenderness and indefinite symptoms in that indefinite area extending from the xiphoid to the pubis. A large group of these individuals are suffering from a hypertonic and spastic condition of the colon, which calls for recreation and an assuring course of treatment, rather than surgical exploration. However, because of the latent possibility of a few of these individuals having definite organic pathology, such as a malignant neoplasm of the colon, a routine examination must necessarily be followed.

Contrary to the belief of a large group of diagnosticians and gastroenterologists, the barium meal is of very little value in examination of the colon. In a large group of patients the colon will be unevenly filled, and the barium will be segmented or confined to different areas. Some of it will have been passed at the time of the examination, unless the radiologist is good at guessing the exact time to examine the patient. About the only time the barium meal may be of definite value is in cases of mild obstruction, but when the obstruction is only sufficient to cause a definite slowing of the barium stream. In a few cases useful information may be secured by the meal, but the accuracy or amount of information obtained is little in comparison to that secured by a barium enema.

At the Mayo Clinic the barium meal is not followed beyond the duodenum except in a few cases of suspected small intestinal pathology. The information furnished by the barium enema is so much more complete that it is a waste of time to them to follow the barium meal further than the ileocecal valve. Where a competent proctologist is available, a better diagnostic opinion can be reached by this specialist in proctoscopic examination as far as the recto-sigmoid. Unless the proctologist is an expert, a competent radiologist may furnish a better diagnosis or opinion of the rectum and the recto-sigmoid. The question immediately arises as to when the physician is competent as an expert. A physician who has given a few dozen or even a few hundred barium enemas should probably not be considered an expert. It would be necessary to have examined several hundred or a few thousand patients with a barium enema, under expert guidance, with sufficient clinical, surgical and postmortem checks before he should consider himself a qualified expert. Unless these checks and cross checks are present, the examiner may continue to make the same mistakes and call it experience.

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* Read at the Annual Scientific Assembly of the Society, May 5, 1938.

The preparation of the patient before the colon examination with a barium enema is exceedingly important. Catharsis with castor oil, unless strongly contraindicated, should be carried out. This should be followed by one or more low, cleansing enemas, until the enemas are returned clear. In other words, the colon should be completely empty from the cecum to the anus. Small fecal masses are difficult or impossible to differentiate from polyps, benign tumors or other organic filling defects. Castor oil has been found to be the ideal cathartic because it is more thorough, leaves less gas and causes less irritation to the colon several hours after taking. Salines are definitely contraindicated because of their incompleteness of action and the presence of fluid remaining in the colon. The radiologist must see the colon fill under the fluoroscope in an absolutely dark room after his eyes have become fully accommodated. The colon should be seen and palpated with the patient rotated and the colon studied in all angles and in all planes. An expert eye will see a lesion it is impossible to portray on a film, because the lesion is frequently visible for only a few seconds. As someone has expressed it, "It is impossible to see the bottom of the stream after the water has been muddied." The patient must be thoroughly relaxed on a vertical table with fluoroscopic attachment. It is only in this way the patient can retain the enema long enough for the radiologist to study the colon and see the areas of intermittent spasticity and peristalsis. At one interval the colon may be markedly dilated, and a few seconds later it may definitely contract, the interval of time being entirely too short to show this variation on films. It is remarkable to those of little experience the number of cases seen of serious organic pathology in the colon, not even suspected at the time the barium meal was passing through the large bowel. In some cases there may be obstruction seen only when the colon is sufficiently dilated with a barium enema. When a barium meal passes this area, the barium may be segmented to such an extent that the filling defect cannot be differentiated. Normal peristalsis in the distal direction will often cause the mucosa of the colon to arrange itself in an obstructed area so that the barium meal will show no evidence of any obstruction, but when the barium stream is reversed by giving a barium enema, a "fish basket" type of obstruction, sometimes almost complete, will be demonstrated. A polypoid tumor may cause a ball-valve effect in the same manner. For this reason the colon should always be examined after the barium has been evacuated, to see if the return flow has been evenly and reasonably complete.

The question always arises as to when a barium enema examination is definitely indicated. The Mayo Clinic probably does a larger percentage of these than any other institution in the world. They examine every case, when the patient is over 40 years of age, of secondary anemia in which sufficient cause has not previously been found to account for the anemia. This is because a few carcinomas of the colon are found every year that gave no leads whatsoever except poor general health and secondary anemia. We find a few cases of malignant disease of the colon with no leads whatsoever except that the patient does not feel up to par and wants a thorough examination. In suspected acute intestinal obstruction there is little or no danger for a competent radiologist to give a barium enema to rule out the lesion from the large intestine. The barium enema can be used to localize the point of the ileocecal area in suspected acute appendicitis that is not definite in its symptoms. The barium enema is of little value for the examination of chronic appendicitis. By the time the entire colon is filled to the ileocecal valve the patient is usually so uncomfortable that there is little time and little coöperation by the patient for the roentgenologist to come to a definite opinion regarding this

(*Continued on page 334*)

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THE PRESIDENT'S MESSAGE

WE ARE A DEMOCRATIC ORGANIZATION

Abraham Lincoln is quoted as having said:

> "It has long been a question whether a democratic State enjoying universal equal suffrage could continue to exist as such, in the presence of a great crisis."

The medical profession is organized as a democracy, exercising universal equal suffrage and enjoying free speech.

It faces a crisis.

Now, even three people can hardly be unanimous, that is, of one mind; from 800 doctors unanimity is not to be expected.

However, though not of one mind, they may have one purpose, if such purpose is once clearly defined and distinctly stated.

Such a purpose, it is hoped, will soon emerge from serious thought and temperate discussion.

This Society has recently elected officers and committee-men; other committees have been appointed as authorized.

Members of these appointive committees have been selected insofar as individual judgment would allow for the purpose of giving competent representation and expression to the varying shades of opinion and purpose of the whole membership.

The Society and President are already greatly indebted to the gentlemen who have accepted committee duty.

Members of experience and ability, who have enjoyed every honor the Society can offer, have promptly and willingly accepted subordinate positions on committees, as well as chairmanships. Younger men of less experience, but equally high purpose, have gladly accepted new responsibilities.

It is not to be expected, nor is it always desirable, that reports and recommendations of committees be accepted without discussion or modification by the Society, because they will embody material about which there is sincere difference of unselfish opinion, concerning not only details of method and policy, but even fundamental principles.

These may evoke warm debate. When this stage is reached, if it is, let us apply the feeling and heat to the subject, if we must, and give to the opponent fellow-member temperate, considerate treatment, even if all his proposals cannot be adopted.

The corollary to Lincoln's statement is, complete unanimity in a large body is impossible. Therefore, unless the responsible majority can exercise its authority with such reasonable moderation and fairness as to evoke collaboration of the dissenting minority on major issues, futile and even fatal division will occur. The consequence, to a nation or a group, will be that both minority and majority will in the end be compelled to submit to a less sympathetic, less understanding, and harsh external authority.

In the interest of the profession, the public, and good-fellowship, then, where conflicting interests exist, let them be compromised; when contentious feelings arise, let them be reconciled.

WILLIAM J. MALLORY, M.D.

WE GO FORWARD

When these comments are published reports on the Medical Society's activities during the past summer will have been made to the Society in general session. A brief review of accomplishments, together with the proposals which have been made, however, seems to us worthwhile. There will undoubtedly be a number of our members who for one reason or another fail to attend the Society's first meeting. This in itself justifies repetition.

As most of our members know, the Society adopted an amendment to its Constitution and By-laws on March 2, 1938, providing for the reorganization of its Executive Committee, effective July 1. The Committee now consists of seven members, including the President, the President-elect, and the Delegate to the American Medical Association. Since its reorganization the Committee has functioned most efficiently confirming the wisdom of the Society's action in creating a less cumbersome executive body.

The newly employed Executive Secretary assumed his duties on June 1. Throughout the summer he has been active in acquainting himself with the local situation. He has also devoted his attention to the improvement of the organization and has submitted recommendations to various committees of the Society. Several of these have been approved. In addition, the committees themselves have initiated projects which will be presented to the Society early in the fall.

Among the activities and proposals which have been made are:

1. Reorganization of Committees. With the employment of a full-time Executive Secretary it was necessary to rearrange the Society's organization structure in such a manner that it would function more efficiently. This was accomplished in a way which did not conflict with the present Constitution and By-laws.

The Executive Secretary, in accordance with his agreement with the Society, was appointed secretary of all committees. Arrangements for meetings and the recording of minutes were assigned to him. Chairmen were requested to confer with him with regard to the plans of their committees. Continuity of the Society's program in this manner has been assured.

2. Economic Studies and Plans. On February 2, 1938, the Society voted that the Subcommittee of the Committee on Public Relations submit for its consideration "a comprehensive plan for providing good medical care." The Subcommittee carried on its work in a most commendable manner until the appointment of new committees on July 1. The task has now been taken over by the Committee on Medical Economics, which in its report to the Society at its meeting on October 5 recommended the adoption of a prepayment medical service plan.

The Committee is also making a study of the need and supply of medical care in the District of Columbia, which it hopes to complete by the latter part of October. At the same time it is canvassing the membership to determine its views on the present method of supplying medical care to the low-income group. An effort is also being made to learn the attitude of the profession toward present methods for the care of the indigent.

Replies received so far have been illuminating. However, at the time this is written only 327 have reported, out of a possible 855, a little more than a third of the membership having made returns. If the present trend of opinion prevails, it will definitely indicate that the majority feel that there is need for better methods than now exist for providing medical service to the low-income group.

3. Expansion of Public Health Activities. The Committee on Public Health is giving consideration to the development of an extensive public health program in the coming year. It will also have reported to the Society when these comments appear.

Many opportunities are afforded the Committee to assume leadership in the public health field. As we go to press a definite program has not been decided upon. Details, however, will be available for publication later.

Subcommittees of the Committee on Public Health are concerned with Communicable Diseases, Prevention of Deafness, Maternal Welfare, Mental Health, Sanitation, Tuberculosis, Venereal Diseases, and Conservation of Vision.

4. Expansion of Health Educational Program. The Committee on Public Information has, with the approval of the Executive Committee, reorganized the Speakers' Bureau, enlarged its

radio program, and extended the facilities for providing medical information to the press. This is an exceedingly valuable phase of the Society's program and deserves the enthusiastic support of our membership.

5. Coöperation with Private and Governmental Agencies. Various committees of the Society have conferred with agencies of the Government with a view of sponsoring medical relief and other health projects. These plans will be presented to the Society when details have been worked out.

The Society will also lend its coöperation, as it has in the past, to the Washington Council of Social Agencies and other civic bodies. Relationships with these organizations will take on more significance as the Society's program expands.

6. Revision of the Constitution and By-laws. As has been apparent to many members of the Society, revision of the present Constitution and By-laws is essential. A subcommittee of the Executive Committee and the Society's legal counsel have been assigned this task. It is expected that the revised Constitution and By-laws will be presented to the Society at its first stated meeting in November.

These are just a few of the Society's activities and proposals. We feel that there is every reason for optimism in the light of the constructive and forward-looking program being proposed.

VENEREAL DISEASE PUBLICITY

The spotlight of publicity during the past two years has turned the attention of the public in a more searching way than ever before to the subject of the prevalence of venereal disease and large scale measures for combating it. Syphilis has received the bulk of the attention in this regard.

An immediate effect of this publicity campaign has been the appropriation by the last Congress of funds to permit the United States Public Health Service in conjunction with local health services and the medical profession to make a broad attack on the reduction of the incidence of syphilis.

Meanwhile a by-product of this campaign is becoming increasingly evident to practitioners of medicine; that is, the greatly accentuated fear on the part of the populace with increasing occurrence of syphilophobia. The increase of these mental conflicts may in time assume very serious proportions, and efforts should now be made to view the problem sanely and without hysteria.

A great responsibility therefore devolves upon the doctor in his relationship with individual patients to see that they are not unduly alarmed, but made attentive to whatever their needs may be. Particularly should the doctor propagate the idea that a positive Wassermann report alone does not incapacitate a man for work or make him dangerous to his fellows.

The practitioner knows the types of lesions which are contagious and the necessity so far as the public health aspect is concerned for insisting that patients be under adequate treatment to remove the element of contagion. Vigorous efforts should be made also to counteract the idea that employees, whether they be cooks, waitresses, or government workers, are not employable by reason of a positive Wassermann test in the absence of contagious lesions.

On the other hand, the responsibility of the doctor is just as strong to make an adequate interpretation of the meaning of the serological report and to convince the patient who needs treatment that for his own sake as well as that of his offspring he must see the treatment through. The doctor's responsibility further implies that he must furnish his patient with the best in antisyphilitic treatment in line with the soundest principles known to date, with suitable safeguards to the end that treatment shall not be followed by unpleasant by-effects.

H. P. R.

THE AMERICAN MEDICAL ASSOCIATION ACTS ON HEALTH PROPOSALS

The Special Session of the House of Delegates of the American Medical Association, held in Chicago on September 16–17, 1938, to consider the proposed National Health Program announced at the National Health Conference held in Washington last July, was undoubtedly the most significant in the history of the Association. With few exceptions, all of the delegates were on hand when the meeting opened. Their realization of the importance of the meeting was attested to by the close attention which they gave to all proceedings. Ample opportunity was afforded for discussion, and there was no hesitation in taking advantage of the opportunity.

Secretaries of the constituent state medical associations and editors of the journals of state medical associations were also in attendance, having been extended an invitation by the Board of Trustees of the American Medical Association. Evidently this action was taken so that constituent state societies would have the benefit of first hand information on important actions taken by the House. The Board announced that the Annual Conference of Secretaries, usually held in November, would be dispensed with.

Attending the special session from Washington were Dr. Henry C. Macatee, Delegate to the American Medical Association; Dr. F. X. McGovern, Chairman of the Executive Committee of the Medical Society of the District of Columbia; Dr. Wallace M. Yater, Editor of the Medical Annals of the District of Columbia; and Theodore Wiprud, the Society's Executive Secretary. Dr. Macatee served as a member of one of the reference committees and presented a report to the House on the recommendation relating to insurance against loss of wages during sickness embodied in the proposed National Health Program. For the purpose of discussing voluntary health insurance plans, Dr. McGovern appeared before the reference committee which considered the recommendation on a general program for medical care. With him were Dr. Yater and Mr. Wiprud.

Reference committees were appointed to report on all recommendations of the Technical Committee on Medical Care to the Interdepartmental Committee to Coördinate Health and Welfare Activities presented at the National Health Conference. (A summary of the proposed National Health Program was published in the September issue of the Medical Annals of the District of Columbia.) Reports of these committees were referred to a committee composed of chairmen of reference committees, which reported its conclusions to the House. The report, which was adopted by the House, reads as follows:

"Since it is evident that the physicians of this nation, as represented by the members of this House of Delegates convened in special session, favor definite and decisive action now, your committee submits the following for your approval:

"1. Under Recommendation I on Expansion of Public Health Services: (1) Your committee recommends the establishment of a federal department of health with a secretary who shall be a doctor of medicine and a member of the President's cabinet. (2) The general principles outlined by the Technical Committee for the expansion of Public Health and Maternal and Child Health Services are approved and the American Medical Association definitely seeks to coöperate in developing efficient and economical ways and means of putting into effect this recommendation. (3) Any expenditures made for the expansion of public health and maternal and child health services should not include the treatment of disease except so far as this cannot be successfully accomplished through the private practitioner.

"2. Under Recommendation II on Expansion of Hospital Facilities: Your committee favors the expansion of general hospital facilities where need exists. The hospital situation would indicate that there is at present greater need for the use of existing hospital facilities than for additional hospitals.

"Your committee heartily recommends the approval of the recommendation of the technical committee stressing the use of existing hospital facilities. The stability and efficiency of many existing church and voluntary hospitals could be assured by the payment to them of the costs of the necessary hospitalization of the medically indigent.

"3. Under Recommendation III on Medical Care for the Medically Needy: Your committee advocates recognition of the principle that the complete medical care of the indigent is a responsibility of the community, medical and allied professions and that such care should be organized by local governmental units and supported by tax funds.

"Since the indigent now constitute a large group in the population, your committee recognizes that the necessity for state aid for medical care may arise in poorer communities and the federal government may need to provide funds when the state is unable to meet these emergencies.

"Reports of the Bureau of the Census, of the U. S. Public Health Service and of life insurance companies show that great progress has been made in the United States in the reduction of morbidity and mortality among all classes of people. This reflects the good quality of medical care now provided. Your committee wishes to see continued and improved the methods and practices which have brought us to this present high plane.

"Your committee wishes to see established well coordinated programs in the various states in the nation, for improvement of food, housing and the other environmental conditions which have the greatest influence on the health of our citizens. Your committee wishes also to see established a definite and far reaching public health program for the education and information of all the people in order that they may take advantage of the present medical service available in this country.

"In the face of the vanishing support of philanthropy, the medical profession as a whole will welcome the appropriation of funds to provide medical care for the medically needy, provided, first, that the public welfare administrative procedures are simplified and coördinated; and, second, that the provision of medical services is arranged by responsible local public officials in coöperation with the local medical profession and its allied groups.

"Your committee feels that in each state a system should be developed to meet the recommendation of the National Health Conference in conformity with its suggestion that 'The rôle of the federal government should be principally that of giving financial and technical aid to the states in their development of sound programs through procedures largely of their own choice.'

"4. Under Recommendation IV on a General Program of Medical Care: Your committee approves the principle of hospital service insurance which is being widely adopted throughout the country. It is susceptible of great expansion along sound lines, and your committee particularly recommends it as a community project. Experience in the operation of hospital service insurance or group hospitalization plans has demonstrated that these plans should confine themselves to provision of hospital facilities and should not include any type of medical care.

"Your committee recognizes that health needs and means to supply such needs vary throughout the United States. Studies indicate that health needs are not identical in different localities but that they usually depend on local conditions and therefore are primarily local problems. Your committee therefore encourages county or district medical societies, with the approval of the state medical society of which each is a component part, to develop appropriate means to meet their local requirements.

"In addition to insurance for hospitalization we believe it is practicable to develop cash indemnity insurance plans to cover, in whole or in part, the costs of emergency or prolonged illness. Agencies set up to provide such insurance should comply with state statutes and regulations to insure their soundness and financial responsibility and have the approval of the county and state medical societies under which they operate.

"Your committee is not willing to foster any system of compulsory health insurance. Your committee is convinced that it is a complicated, bureaucratic system which has no place in a democratic state. It would undoubtedly set up a far reaching tax system with great increase in the cost of government. That it would lend itself to political control and manipulation there is no doubt.

"Your committee recognizes the soundness of the principles of workmen's compensation laws and recommends the expansion of such legislation to provide for meeting the costs of illness sustained as a result of employment in industry.

"Your committee repeats its conviction that voluntary indemnity insurance may assist many income groups to finance their sickness costs without subsidy. Further development of group hospitalization and establishment of insurance plans on the indemnity principle to cover the cost of illness will assist in solution of these problems.

"5. Under Recommendation V on Insurance Against Loss of Wages During Sickness: In essence, the recommendation deals with compensation of loss of wages during sickness. Your committee unreservedly endorses this principle as it has distinct influence toward recovery and tends to reduce permanent disability. It is, however, in the interest of good medical care that the attending physician be relieved of the duty of certification of illness and of recovery, which function should be performed by a qualified medical employee of the disbursing agency.

"6. To facilitate that accomplishment of these objectives, your committee recommends that a committee of not more than seven physicians representative of the practicing profession, under the chairmanship of Dr. Irvin Abell, President of the American Medical Association, be appointed by the Speaker to confer and consult with the proper federal representatives relative to the proposed National Health Program."

"THE DOCTOR IS ON THE AIR"

Out of the loud speaker every Wednesday morning comes the above announcement. Salesmen and taxi drivers riding about in their radio-equipped cars turn up the volume control; housewives turn off the vacuum cleaners for 15 minutes; and the ill, confined to bed in the hospital and at home, edge nearer to their radios to hear the weekly broadcast of the Medical Society of the District of Columbia.

Introduced by the melodious strains of the "Prize Song" from Wagner's "Meistersinger," the announcer goes on: "At this time every Wednesday morning the Medical Society of the District of Columbia presents 'Dr. John,' the Society's 'Family Doctor' of radio." He then goes on to say that "Dr. John" comes each week with timely advice concerning health problems and that "the doctors of Washington stand ready day and night not only to help you get well, but also to help you keep well." There follows then a dialogue between Dr. John and one or more of his hypothetical patients concerning a health problem which has arisen.

What goes on behind the scenes to make the broadcast possible? It is conservatively estimated that a good 15-minute broadcast requires a full day or more for preparation and the services of several people. To begin with, the Committee on Public Information, at a meeting called for that purpose, goes over its radio program and assigns certain subjects to be covered at definite times. The program is then put in the hands of the Vice Chairman of the Committee who undertakes the extremely arduous detail work connected with actual radio presentation. He must first request some member of the Society to prepare material on the subject to be presented on a certain date. This is no small task, as anyone who has prepared a radio script knows. The subject on which the broadcast is made is written in suitable dialogue form and in a style of speech which is natural, bright and interesting to the listener. This requires several revisions and re-writings of the script which will run 10 or more pages.

The finally revised script with the opening and closing announcements must be ready two weeks before the broadcast is to be given. A suitable number of copies are typewritten at the Medical Society's office with a large-type typewriter on paper designed to be relatively rattle-proof when handled before the microphone. Copies are made for each person who appears on the broadcast, including the announcer and the engineer, and file copies are prepared for the Medical Society, the Vice Chairman, and the Public Library of the District of Columbia. Extra copies are usually made to be sent out in response to the numerous letters which are received requesting copies of a particular broadcast.

Careful planning and attention to details is very important because broadcasts are made regularly throughout the year. Week after week, throughout the winter and summer, programs are being given so that a definite routine must be followed. There is no such thing as going on the air unprepared without inviting failure.

On October 1 the Committee on Public Information concluded its fourth year of consecutive weekly broadcasts by "Dr. John." Never has a broadcast failed to go on the air except when the time allotted was withdrawn by reason of certain necessary emergency broadcasts from the White House or elsewhere. In addition to the regular weekly broadcast 10 or 12 special broadcasts are usually put on at other times in the course of the year.

Since October 1, 1934, broadcasts have been regularly heard over Station WMAL, recently called "The Evening Star Station." Special broadcasts have been given over all of the other local broadcasting stations.

The part of "Dr. John" is not always taken by the same person and may be any member of the Committee, or of the Society, radio-trained by members of the Committee. The response on the part of Society members asked to prepare and present material for broadcasts has been gratifying. Other members of the Society will be approached from time to time to give this gratuitous anonymous service to the Society and from past experience it is expected that a similar cordial response will be met.

In preparing script the Committee has avoided, wherever possible, crediting any particular member of the Society for his efforts. It is all a part of the general public service of the Medical Society.

"Dr. John" has a large and regular listening audience. This is attested by fan letters received during the past four years, also numerous telephone calls and letters that greet any change in time of the broadcast. A slip of the tongue or an error in presentation of facts also brings forth protests. At times audience testing has been done by offering a copy of the broadcast in the closing announcement. This usually results in a considerable volume of mail. It is hoped that the facilities of the Society's office may be expanded so that this sort of an announcement may be made on every broadcast as a part of the campaign of the Society to provide health information.

Suggestions from members of the Society are welcomed by the Committee. Meanwhile, listen in for the program "The Doctor Says" over WMAL on Wednesday morning at 11:45. Topics are usually carried in the Medical Annals in advance of the broadcast. Some of the subjects which have been presented are: "Getting the Child Ready for School," "Stomach-aches and Cathartics—The Tragedy of Appendicitis," "High Blood Pressure," "Why Vaccinate Against Smallpox," and many others up to the number of about 400.

Special mention should be made of the enthusiastic coöperation and advice given the Society on all occasions by the entire administrative and technical staff of the National Broadcasting Company.

Herbert P. Ramsey, M.D., *Chairman,*
Committee on Public Information

(*Continued from page 326*)

organ. If chronic appendicitis is suspected a barium meal with the patient examined in the horizontal position is by far preferable. Sufficient time and coöperation can be obtained to get a fairly definite opinion of this organ.

Roentgenograms of the colon are of little value except to confirm the roentgenologic findings seen by the radiologist at the fluoroscopic examination. Frequently one or more films are brought to a radiologist of a colon filled with barium for an opinion as to pathology in this viscus. Unless the lesion is outstanding, definite and preferably duplicated on two or more films, a conservative radiologist will seldom volunteer a very definite opinion.

Regardless of the clinical symptoms and other findings, a positive roentgenologic finding by an expert radiologist clinches the diagnosis for the better trained surgical and medical consultants. These specialists accept the roentgenologic findings of the colon by an expert radiologist as the final opinion until the condition is proven to be otherwise.

CALENDAR FOR COMING MEETINGS

Wednesday, November 2: Business Meeting.

Wednesday, November 9: Program to be announced later.

Wednesday, November 16: Baltimore Medical Society will be our guests at a buffet supper and will furnish the program.

Wednesday, November 23: No meeting.

Wednesday, November 30: Symposium on Rheumatism. Among the subjects to be discussed will be "Observations on the Use of Chaulmoogra Oil in Arthritis" by Camp Stanley, M.D., F.A.C.S.

Wednesday, December 7: Business Meeting.

Wednesday, December 14: Program will be furnished jointly by the Georgetown Clinical Society and the George Washington University Medical Society. To be followed by buffet supper.

NEWS AND PERSONALS

The Oklahoma County Medical Society will act as host to the Southern Medical Association on November 15–18, 1938. Meetings will be held in Oklahoma City's new Municipal Auditorium. The Auditorium is one of the most beautiful buildings of its kind constructed during recent years. It is located close in to the downtown district and is sursounded by other buildings of the civic center group. Because of recent hotel construction, ample hotel facilities are available for those who attend this meeting.

Tentative plans for this year's program assure a wealth of scientific papers and exhibits covering the whole field of medical practice.

The Washington Gynecological Society announces that its officers for the ensuing year are as follows:

Drs. J. J. Mundell, *President;* H. P. Ramsey, *First Vice President;* Richard L. Silvester, *Second Vice President;* H. J. Russell McNitt, *Secretary;* George Nordlinger, *Treasurer;* John W. Warner, *Historian.*

Members of the Council are: Drs. Howard F. Kane, *term expires 1942;* Leon A. Martel, *term expires 1941;* W. J. Stanton, *term expires 1940;* A. E. Pagan, *term expires 1939;* J. F. Crowley, *ex-officio one year.*

The first meeting of the Society will be held on October 22nd. Dr. M. Pierce Rucker of Richmond, Virginia, will present a paper on "Toxemias of Pregnancy."

The Woman's Auxiliary to the Medical Society announces the following officers for 1938–1939:

Mrs. William J. Mallory, *President;* Mrs. James A. Cahill, Jr., *First Vice President;* Mrs. Horatio N. Dorman, *Second Vice President;* Mrs. Caryl Burbank, *Treasurer;* Mrs. James M. Moser, *Secretary;* Mrs. Hugh J. Davis, *Recording Secretary;* Mrs. Wade H. Atkinson, *Historian.*

Committee Chairmen: Mrs. William Wiley Chase, *Membership;* Mrs. Robert M. Bolton, *Ways and Means;* Mrs. William Thornwall Davis, *Finance;* Mrs. James G. Cumming, *Social;* Mrs. Samuel A. Alexander, *Public Relations;* Mrs. Francis X. McGovern, *House;* Mrs. Leon A. Martel, *Program;* Mrs. Cyrus Whitney Culver, *Publicity;* Mrs. Cline N. Chipman, *Special Committee on Education.*

The Education Committee appointed to place the deserving young woman chosen by the Auxiliary in a nurses' training school in Washington has entered her in the Sibley Hospital Training School. Expenses relating to equipment, uniforms, etc., are being defrayed by the Auxiliary.

Mr. Theodore Wiprud, Executive Secretary of The Medical Society of the District of Columbia, addressed the Auxiliary at its October meeting on October 5, 1938.

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A STUDY OF THE CYSTINE AND TRYPTOPHANE CONTENT OF NORMAL AND PATHOLOGIC SERA*

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Some years ago, Sullivan, Hess, and Sebrell[1] in work with the white rat came to the conclusion that in metabolism there was an amino-acid balance. Thus cystine and tyrosine added singly, at a 5 per cent level, to the basal diet showed marked toxicity while when fed together the evidence of toxicity was very much lessened. This finding suggested that there might exist in the normal human body also, a balance between various amino-acids, a balance which might suffer disturbance in disease. The emphasis that clinicians are placing upon blood tests and the relative facility experienced in obtaining blood samples suggested a study of the blood serum relative to the concentration of certain of the amino-acids and led to the present investigation.

Since proteins differ by virtue of their constituent amino-acids the original plan was to estimate a number of amino-acids such as tyrosine, cystine, tryptophane, arginine, and histidine. Work on mixtures of various amino-acids including the five mentioned, however, showed that this plan in the present state of our methods was not feasible.

In fact, in a detailed study of tests given for various amino-acids only those for cystine and tryptophane were found useful for our purpose as far as ease of performing, delicacy, and the degree of specificity and reliability were concerned. Aside from the reliability of the tests for these amino-acids, the study of their relationship in body economy, though hitherto not considered, seemed desirable because of the importance of cystine and tryptophane in physiologic economy, an importance that may be briefly outlined.

Cystine was long considered an essential dietary amino-acid by numerous investigators. Jackson and Block,[2,3] however, made this concept questionable when they found that methionine would supplement satisfactorily a low casein ration. Then satisfactory evidence was gathered by Rose[4] that the essential dietary sulfur-containing amino-acid is methionine. Whether formed from methionine in the body economy, as suggested by Brand et al.[5], or absorbed as such, cystine is of great importance in the physiology of the human body. In fact, its rôle is more likely to be minimized than exaggerated.

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* The data in this paper are taken from the dissertation presented by H. S. Milone in partial fulfillment of the requirements for the degree of Doctor of Philosophy, Georgetown University, 1936.

Cystine occurs in large amounts in the hair, the nails, and the skin, and in unpublished work by Sullivan and Hess it was found in considerable amounts in a large number of hormones and enzymes. Cystine occurs in high concentration in serum albumin, as found by Folin and Marenzi[6] and by Sullivan and Hess.[7] As the mother substance of taurine it permits the formation of taurocholic acid, a bile acid of importance. As to the rôle of cystine in detoxification just a few examples should suffice. As a source of combining sulfur, cystine is used to a high degree by the human body to convert the highly toxic cyanides to the relatively innocuous thiocyanates and to detoxify indole, skatole, and phenolic compounds. Finally, cysteine, formed from cystine by reduction, is used in toto to render harmless toxic aromatic compounds like brombenzene. In normal metabolism cystine as an integral component of glutathione is of vital importance in cellular respiration, biologic oxidation-reduction and in biochemical defense. The wide rôle of sulfur and cystine in vital activities has been reviewed by Sullivan.[8]

The importance of studying the metabolism of cystine and sulfur in disease is becoming more evident with each new investigation. Early investigations of the urine, saliva, and diet of pellagra cases by Sullivan and Jones[9] and by Sullivan and Dawson[10] indicated an abnormal metabolism of sulfur in this disease. Such investigations when extended by Sullivan and Hess[11] to arthritis disclosed that in many cases of arthritis the cystine content of the finger-nail clippings was considerably below that of normal individuals, a finding that is not peculiar to arthritis but is rather symptomatic of a state of cachexia.

From the standpoint of blood analysis, Looney,[12] Metzger,[13] Tuchmann and Reiner,[14] and Reiner and Sobotka[15] investigated the cystine content of the serum proteins of normal individuals, and later Metzger[16,17] reported findings on the serum proteins of some pathologic cases. However, all of the work on the extracted, dried serum proteins is difficult to evaluate; first, because of the individual variation in the albumin and globulin content of the serum of normal as well as of diseased individuals, and second, because different methods for extracting and drying the proteins give different results. However, Metzger succeeded in showing that in pathologic cases, although the globulin cystine tended to remain normal, the albumin cystine was appreciably decreased. All these investigations are suggestive of a relationship between cystine metabolism and certain pathologic conditions, but are not sufficiently conclusive.

Much has been done on the importance of tryptophane in the diet. According to Osborne and Mendel[18] tryptophane is absolutely essential for maintenance. On the other hand the study of the variation of tryptophane in blood in health and disease is still an open field for investigation. Fischer and Weiss[19] report work on the tryptophane content of a number of pathologic sera and consider that the variation is tied up with a change in the albumin-globulin ratio or a change in the chemical structure of the proteins. Metzger,[13, 16, 17] studying the tryptophane content of the serum proteins of normal individuals and of pathologic cases, reported that whereas the globulin tryptophane was the same for both, the albumin tryptophane was greater in the pathologic sera than in normals. Also Wohlfeil[20] found that the tryptophane content of the total serum proteins was greater for tuberculous guinea pigs than for normal guinea pigs. Ohlsson,[21] in fact, suggested the possibility of computing the albumin-globulin ratio from the tryptophane content of the serum albumin and serum globulin. Ohlsson, Nordh, and Swaetichen,[22] working with plasma protein, reported a definite correlation between the tryptophane content of the plasma protein and the Fåhraeus sedimentation reaction. On the other hand, Lang,[23] working with serum proteins, could find no correlation between the tryptophane content of the proteins and the albumin-globulin ratio nor between the tryptophane content of the serum proteins and the sedimentation reaction.

As regards the claims of Ohlsson et al., it may be said that the plasma proteins would include fibrinogen, which according to Fürth and Lieben[24] is rich in tryptophane. Since fibrinogen is rich in tryptophane and since Kylin[25] has shown that the sedimentation rate of the red blood corpuscles depends on the relative concentration of the various plasma proteins, the claim of Ohlsson, Nordh, and Swaetichen may be correct. As early emphasized by Halliburton[26] and by Langstein and Mayer[27] and verified by others later, there occurs in some acute infections, such as pneumococcal and streptococcal, a great increase in the fibrinogen content of the plasma. It would follow that in any condition in which there is an increase in the fibrinogen there might be a parallel increase in the tryptophane content of the plasma proteins and in the sedimentation rate. A further indication of the metabolic significance of tryptophane is found in the work of Brice,[28] who examined 525 specimens of urine obtained from general surgical and medical cases. He found tryptophane in 33 per cent of the cases. This finding he considered was suggestive of some underlying derangement of protein metabolism. From another viewpoint Fontes and Thivolle[29] reported improvement in anemia cases by intravenous administration of tryptophane and histidine. These results were corroborated by Cuthbertson, Fleming and Stevenson.[30] Weiss, Aron, and Holtzmann[31] found that injection of tryptophane and other amino-acids stimulated the healing of artificial lesions of the gastric mucosa.

In our work with blood serum, without separation of the protein, emphasis is placed not on the absolute amount of cystine and tryptophane but rather on the relationship or the ratio of cystine to tryptophane.

Methods

The methods employed in the present study were: for cystine the Sullivan[32, 33] method which has a high degree of specificity for free cystine and has been thoroughly authenticated; for tryptophane a modification of the May and Rose[34] procedure with such an acceleration of color development by means of a higher temperature and use of dilute hydrogen peroxide that the tryptophane content of a protein can be readily determined within 30 minutes. In a long series of determinations by Sullivan, Milone, and Everitt[35] the short procedure given in detail under the sera investigation was found to give exactly the same value for casein, namely, 2.4 per cent tryptophane, as given by a nine-day color development recommended by Holm and Greenbank.[36]

For the determination of both cystine and tryptophane 1.0 c.c. of serum was used. Plasma cannot be used directly because of the difficulty of getting rid of hemoglobin color in both the cystine and tryptophane work and because of the wide variation in the fibrinogen content and consequent variation in tryptophane.

Cystine determination: One c.c. of serum was placed in a 50 c.c. acetylation flask and to it was added 2 c.c. of a 30 per cent solution of HCl, with a final concentration of about 20 per cent HCl. The mixture was then digested in an oil bath maintained at 125°C. for 6 hours, timing the temperature from the moment the bath reached 125°C. The hydrolysate was then permitted to cool and the cystine estimated by the colorimetric method of Sullivan as applied to casein hydrolysates. The hydrolysate was transferred to a 50 c.c. beaker together with the washings of the acetylation flask for which purpose about 3 c.c. of distilled water was used. Since the hydrolysates were comparatively clear and contained very little charred residue no decolorization was necessary. The total solution was neutralized carefully with 5N NaOH added dropwise with stirring until the pH was about 3.5 (greenish blue to bromphenol blue) and the whole brought to a volume of 20 c.c. and filtered. Five c.c. of this filtrate corresponding to 0.25 c.c. of the original serum was used for colorimetric estimation as described by Sullivan[33] for casein, using 1.0 mg. of cystine in 5 c.c. of 0.1N HCl as standard.

Tryptophane determination—short method: One c.c. samples of serum were added to 250 c.c. Erlenmeyer flasks in which has been placed 100 c.c. of 17.5 per cent HCl containing 1.0 c.c. of a 5 per cent solution of paradimethylaminobenzaldehyde in 10 per cent H_2SO_4. The solutions were placed on an electric hot plate and the temperature maintained at 85°C. for 15 minutes from the time the solution reached 85°C. The solutions were then removed from the hot plate and to each was added 0.3 c.c. of a 0.3 per cent solution of hydrogen peroxide with mixing. Cooled to room temperature (20–25°C.) the solutions were filtered and the blue color compared in a colorimeter against a casein standard (0.1 gm. of casein representing 2.4 mg. of tryptophane) similarly and simultaneously treated. The tryptophane value of the casein was previously determined by the procedures outlined by Sullivan, Milone and Everitt.[35] The results of the tryptophane and the cystine determinations on the sera of normal individuals and of pathologic cases, together with a brief statement of the pathology as given by the attending physician, are presented in the accompanying tables. The cystine and tryptophane content are expressed in milligrams per 100 c.c. of serum.

Discussion

The results may be summarized as follows:

1. The serum of 38 normal individuals averaging about 23 years of age showed the following:

a. A cystine content of 320 to 444 mg. per 100 c.c. of serum, with an average cystine content of 363 mg.

b. A tryptophane content of 162 to 212 mg. per 100 c.c. of serum, with an average tryptophane content of 181 mg.

c. The cystine to tryptophane ratio varying from 1.93 to 2.12, with an average of 2.00.

2. The serum of 36 pathologic cases (A) of patients varying from 20 to 69 years of age and

TABLE 1

The cystine and tryptophane content of the serum of normal individuals

NO.	MG. PER 100 C.C. SERUM		CYSTINE: TRYPTOPHANE RATIO
	Cystine	Tryptophane	
1	320	162	1.98
2	325	162	2.01
3	330	167	1.98
4	333	167	2.00
5	333	167	2.00
6	336	167	2.00
7	336	171	1.96
8	343	171	2.00
9	343	173	1.98
10	344	172	2.00
11	344	178	1.93
12	346	173	2.00
13	348	171	2.04
14	348	176	1.98
15	350	173	2.02
16	352	178	1.98
17	354	183	1.94
18	356	182	1.96
19	357	178	2.01
20	359	178	2.02
21	360	175	2.06
22	363	171	2.12
23	362	181	2.00
24	364	180	2.02
25	364	181	2.01
26	369	180	2.05
27	372	184	2.02
28	381	187	2.04
29	381	189	2.02
30	381	189	2.02
31	384	190	2.02
32	390	198	1.97
33	390	198	1.97
34	394	204	1.93
35	398	202	1.97
36	402	199	2.02
37	404	204	1.98
38	444	212	2.10
Average.....	363	181	2.00

TABLE 2

The cystine and tryptophane content of pathologic sera, group A

CASE	CONDITION	MG./100 C.C. SERUM		CYSTINE / TRYPTOPHANE
		Cystine	Tryptophane	
1	Molar abscess, pain in joints	349	199	1.75
2	Psoriasis	333	202	1.65
3	Gingival abscesses, abscessed teeth	280	164	1.71
4	Myasthenia gravis	338	181	1.87
5	Peritonitis	320	185	1.73
6	Gonorrhea (acute)	318	218	1.46
7	Amebic dysentery	314	189	1.66
8	Colloid goiter, chronic bronchitis	332	213	1.56
9	Acute arthritis (gonorrheal)	332	182	1.83
10	Systemic infection	296	187	1.58
11	Chronic bronchitis	250	148	1.69
12	Leukemia	367	253	1.45
13	Anemia, secondary	321	253	1.27
14	Peritonitis; hypertension; aneurysm	333	202	1.65
15	Diabetes; wet gangrene	340	215	1.58
16	Appendicitis	335	210	1.60
17	Ulcerative colitis	250	213	1.17
18	Cardio-nephritic infection	291	181	1.61
19	Cellulitis	308	231	1.33
20	Appendicitis	369	211	1.75
21	Diabetes; wet gangrene	246	163	1.51
22	Recto-vaginal abscess	333	181	1.84
23	Diabetes; wet gangrene	348	198	1.76
24	Diabetes; congestive heart failure	286	182	1.57
25	Pelvic cellulitis (gonococcal)	348	199	1.75
26	Diabetes; congestive heart failure	288	208	1.38
27	Syphilis, chancre	225	148	1.52
28	Syphilis; acute appendicitis	320	192	1.67
29	Syphilis, chancre	225	202	1.11
30	Renal tuberculosis (renal diabetes)	375	208	1.80
31	Peritonitis	318	201	1.58
32	Toxic adenomata of thyroid	364	209	1.74
33	Follicular tonsillitis; bursitis	364	228	1.60
34	Buerger's disease; cellulitis	348	193	1.80
35	Rheumatoid arthritis	320	200	1.60
36	Grippe	328	206	1.60
Average..........................		317	199	1.60

considered by various physicians to be acute conditions or acute flareups of chronic conditions showed the following:

a. A cystine content of 225 to 375 mg. per 100 c.c. of serum, with an average of 317 mg.

TABLE 3

The cystine and tryptophane content of pathologic sera, group B

CASE	CONDITION	MG./100 C.C. SERUM		CYSTINE / TRYPTOPHANE
		Cystine	Tryptophane	
37	Neuritis	404	204	1.98
38	Neuritis	369	180	2.05
39	Dental caries softening teeth	339	173	1.96
40	Rheumatic heart disease	381	198	1.92
41	Syphilis, secondary	402	202	1.99
42	Hypothyroidism	426	214	1.99
43	Hypertension; arteriosclerosis	364	176	2.07
44	Arteriosclerosis	369	173	2.13
45	Tuberculosis	396	199	1.99
46	Diabetes mellitus	314	154	2.04
47	Diabetes; dry gangrene	326	169	1.93
48	Diabetes mellitus	297	145	2.05
49	Diabetes mellitus	315	155	2.03
50	Diabetes; dry gangrene	367	179	2.05
51	Anemia, secondary	315	160	1.97
52	Trichinosis	281	139	2.02
53	Diabetes mellitus	332	165	2.01
54	Duodenal ulcer, recovering	360	180	2.00
55	Lymphangitis (arrested)	378	186	2.03
56	Hypertrophic arthritis	348	171	2.04
57	Hypertrophic arthritis	350	182	1.92
58	Syphilis, secondary	356	177	2.01
59	Syphilis, secondary	369	184	2.01
60	Syphilis, tertiary	342	171	2.00
61	Syphilis, secondary	340	169	2.01
62	Syphilis, secondary	342	173	1.98
63	Hypertrophic arthritis	384	201	1.91
64	Hypertrophic arthritis	384	191	2.01
65	Hypertrophic arthritis	349	176	1.98
66	Pulmonary tuberculosis	364	180	2.02
67	Diabetes mellitus	357	175	2.04
Average		356	177	2.00

b. A tryptophane content of 148 to 253 mg. per 100 c.c. of serum, with an average of 199 mg.

c. The cystine to tryptophane ratio varying from 1.11 to 1.87, with an average of 1.60.

3. The serum of 31 pathologic cases (B) diagnosed as chronic, of patients varying in age from 19 to 71 years, showed the following:

a. A cystine content of from 281 to 426 mg. per 100 c.c. of serum, with an average of 356 mg.

b. A tryptophane content of from 139 to 214 mg. per 100 c.c. of serum, with an average of 177 mg.

c. The cystine to tryptophane ratio varying from 1.91 to 2.13, with an average of 2.00, the same as for the normals.

The results cited and presented in the tables indicate clearly that the significant factor is the ratio or balance between cystine and tryptophane. There exists in the normal serum a relationship between the two amino-acids which is disturbed in certain pathologic conditions.

The cases in which the cystine-tryptophane ratio has been disturbed are considered in one group (A). Of all the cases in this group, 25 (about 70 per cent) were suffering from an acute condition, about 6 cases were of questionable etiology, and 5 were suffering from conditions often considered to be chronic. Of the 25 cases known to be acute the cystine-tryptophane ratio is 1.57; of the 11 questionable cases (2, 3, 4, 8, 11, 24, 25, 26, 30, 34, 35) the ratio is 1.67. The group B cases had normal cystine to tryptophane ratios. All of this group were chronic with the exception of a case of quiescent lymphangitis.

The disturbance in the relationship between the cystine and the tryptophane content of the blood serum observed in the relatively acute conditions of group A is due to a decrease in cystine and an increase in tryptophane.

It is generally accepted that normally the albumin exists in the blood serum to a higher degree than does globulin and that the ratio is lowered or reversed in many diseases.

In this regard it may be said that, as shown by Looney,[12] Lang and Braun,[37] and Tuchmann and Reiner,[14] the cystine content of the serum albumin is greater than that of the serum globulin. Conversely, the tryptophane content of serum globulin is greater than that of serum albumin, as shown by Fürth and Nobel[38] for horse blood and by Metzger[16] for human blood.

It may be said, however, that estimation of the cystine and the tryptophane content of the serum in toto seems preferable to separating albumin and globulin with the difficulty of getting the separates pure and with the possibility of making artefacts by chemical manipulation. In this connection attention may be called to the views of Osborne and Mendel,[18] who emphasized the significance of the amino-acids as the fundamental factors in all problems in which hitherto the rôle of proteins has been involved. These remarks pertain to nutrition studies but in our opinion hold as well for blood studies.

Without prejudice as to value of determining albumin and globulin as such, we would recommend the determination of various individual amino-acids for which tests are satisfactory. These tests for the amino-acids should be made on the serum without fractionation. As matters stand, a study of the cystine and tryptophane content of the total blood serum has brought out the important new finding that normally a definite ratio exists between these amino-acids.

Conclusions

1. Using the Sullivan cystine method and a rapid procedure for tryptophane there was found considerable variation in both cystine and tryptophane in blood serum. The ratio of cystine to tryptophane, however, varied only from 1.93 to 2.12 in normal individuals, with an average of exactly 2.00.

2. In acute infections the ratio of cystine to tryptophane varied considerably from 1.11 to 1.87, with an average of 1.60.

3. In chronic conditions studied the ratio is like the normals, the average being exactly 2.00.

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CHRONIC SINUSITIS IN CHILDREN

WITH SPECIAL REFERENCE TO X-RAY THERAPY*

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This presentation is made to point out certain features of chronic sinus disease in children, which is considerably confusing as one reads the present mass of literature on the subject. It is hoped that the etiology, incidence, symptomatology and diagnosis may be somewhat clarified. A method of treatment is advanced which was first used by Osmond[1] in 1923 and since followed by others[2, 3, 4] with reasonable success. The history of sinus infection in adults frequently dates back to childhood. If treatment by this method continues to prove successful, it may be that the incidence of adult sinusitis will be reduced.

It is undoubtedly true that more infections take place by way of the respiratory system than by any other route. The gastrointestinal tract runs a poor second. The first inhalation of the newborn begins the life-long battle against infection, with the tissue and blood reactions, antibody formation, etc.; and so long as avirulent organisms are inhaled and ingested, the organism remains free of obvious disease, and increasing immunity is built up. There comes a day when these protective mechanisms are overcome and the first "cold" results.

Three etiologic factors may be ascribed to the development of sinusitis: (1) repeated "colds," (2) attacks of allergic rhinitis, and (3) acute infectious diseases, such as measles, scarlet fever, pneumonia and influenza.

The production of sinusitis as a sequel to "colds" is mechanically identical to that from allergic rhinitis. In either case there is congestion, edema and swelling of the mucous membrane, partial closure of the sinus ostia, and stagnation of drainage therefrom with subsequent infection.[5] This process is abetted by the coincident swelling of the adenoids with blockage of drainage postnasally. From this point on, certain differences develop both pathologically and clinically.

According to Dean[6] a high percentage of cases of sinusitis is the result of repeated attacks of allergic rhinitis. He says, "In my judgment attacks of allergic rhinitis in infants leave behind a thickened membrane which predisposes to the formation of polyps. Such patients throughout life present the swelling of the membrane." To the pure infectious case without allergy he ascribes a permanently thin mucous membrane. The percentage of allergy in these cases with thickened membranes is given as 50 by Rackemann of Boston and 60 by Cameron of Glasgow; Dean admits of a much higher percentage, but he does not give a figure. When one searches the literature for proof of allergy as the principal factor in the production of sinusitis, it is impossible to find criteria for such a diagnosis. Also one's clinical experience would not support this claim. The allergists admit the fallacies encountered in skin testing, and the same may be said of the mucosal tests. Cytologic examination of the nasal secretion leaves one apparently as confused as before, to quote Dean:[7] "In differentiating the two (i.e., the infectious versus the allergic sinusitis) the cytological study of the nasal discharge is of importance. An abundance of eosinophils in the nasal discharge always suggests allergic rhinitis. The absence of eosinophils does not exclude allergic rhinitis. An abundance of polymorphonuclear neutrophils in the nasal discharge always means infection in the nose or nasal sinus. Their absence in the discharge taken from the nasal sinuses would exclude acute infection of the sinuses." This same method is used in evaluating chronic sinusitis. He does not mention the factor of bacterial allergy, quite often described by other writers. It is a definite clinical observation that the hyperplastic type of rhinitis associated with sinusitis is present in children who have no history or other evidence of allergy. This can be demonstrated by the frequent occurrence of cases of infection in only one antrum. Until proof is established by more specific allergic tests, infection must be considered as the principal factor in the production of chronic sinus disease. At any rate, the factor of infection has to be dealt with in the large majority of cases of sinusitis of long duration.

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* Read at the Annual Scientific Assembly of the Society, May 4, 1938.

This attitude is supported by Grove and Cook[8] who state that the cause of hyperplastic sinusitis with or without polypi is a primary infection in a person with an allergic constitution. Treatment of allergy alone in these cases will not reduce the hyperplasia. They further believe that the allergy is a sensitization to the infection: "It is hard to deny such a supposition, but clinically we do find a severe ethmoid infection with necrosis, pus and polyps which show no general evidence of being allergic. . . . They (the polypi) do not tend to recur after removal to the same extent as the allergic cases. . . . This, of course, does not prove that they were not sensitive to their bacterial proteins which disappeared with the eradication of the focus of infection, but many present only symptoms of a chronic infection."

In evaluating the infectious element in sinusitis, one has only to refer to the repeated "colds" which produce the edema and swelling referred to above. Very soon after one or two such attacks, with the factor of stagnation, infection is bound to occur.[3] This is the experience of practically every physician who has to deal with children who have colds frequently. The rôle of the hypertrophied adenoid tissue in the production of stagnation as a preliminary to sinusitis can be readily seen. This process is well described by Coffin in Jackson and Cotes' "Diseases of the Ear, Nose and Throat": "Children frequently have adenoids. Adenoids give rise to obstructed breathing and conduce to retention of nasal secretions . . . and inflammatory conditions. . . . Those inflammatory changes in the lining membranes of the nose very frequently extend by continuity into the accessory sinuses. . . . The pathological changes taking place in the lining membrane during a catarrhal attack are to an extent permanent, and if often repeated the membrane is liable to become quite pathological. Marked changes in the circulation take place, as a result of which the membrane may become either hyperplastic or atrophic according as to whether the venous or arterial circulation is most affected. . . . At any stage of these inflammatory changes, infection from the activity of any of the pus producing organisms may take place. . . ."

Shea[9] has very clearly explained the causation of infection in most instances as follows: "Nature has so organized the laboratories of our body that we first fight our infection in infancy with the adenoid, and as we grow older, with the tonsil, which becomes a most active lymphoid tissue of the nose and throat. In the aged, this selective localization is the cause of the activity of the lingual tonsil. Somewhere during the transition, the sinuses develop sufficiently to aid in the battle of autoimmunization. If the tonsils and adenoids are removed, this burden of autoimmunization is assumed by the sinuses. As long as the natural forces are able to maintain the proper immunity, the child remains well, but when there occurs a bankruptcy of the immunization and a depression of the child's resistance, purulent discharge will be profuse, with a blocking and retention of some of the discharge within the sinuses. Chronic sinus disease in children results in the failure to improve after a severe attack or the accumulation of many mild attacks." This explanation is further strengthened by Ruskin[10] in which he calls attention to the "post-tonsillectomy sinusitis," in which the removal of all lymphoid tissue in the nasopharynx throws the burden of infection on the lymph follicles of the nasal and sinus mucosa.

Whatever starts the process of chronic sinus disease, infection invariably becomes the important factor.

Clinically the child's complaint is much more often concerned with some remote part of the body than with the sinus. One group of writers refer to the mucous membrane of the nose as a delicate "instrument board" which registers not only local but systemic disturbances.[11] Persistent clearing of the throat, sniffling, chronic cough, particularly that type so commonly heard at bedtime and early morning, and the recurrently blocked nares are the common complaints. Acute otitis media, cervical adenitis, the so-called acute upper respiratory infections, recurrent acute bronchitis, asthmatic bronchitis and bronchopneumonia are other conditions frequently secondary to infection in the sinuses.

Constitutional symptoms often noted are malnutrition, underweight, anemia, anorexia, lassitude, irritability, all of which are conducive to lack of school progress.

Parenteral diarrhea may occur. Several years ago Dean pointed out that the diarrhea so commonly associated with acute otitis media and mastoiditis was benefited materially by prompt drainage. It has been stated by many observers that recurrent acute otitis media is almost invariably accompanied by acute sinusitis or an exacerbation of a chronic sinusitis. The otitis which causes parenteral diarrhea has been usually of the recurrent type or one persisting over a long period of time. Mitchell[12] calls attention to numerous remote manifestations of the common cold. He makes the further observation that a "continued low-grade fever of obscure origin was observed in some and in eight a peribronchial lymphadenitis was seen to develop from some leftover complication in the upper respiratory tract." W. L. Hughes in the discussion of Mitchell's paper says that this coincidence of otitis media and diarrhea leads him to believe that both have a common cause in the subacute or chronic sinusitis.

An analysis of 76 cases encountered in private practice in which a thorough history could be obtained and X-ray films of the sinuses made, reveals an amazing group of symptoms and complications (Table 1).

It is generally known that the drainage from a chronically infected sinus is carried by way of the lymphatics to the retropharyngeal glands and possibly through anastomosis to the peribronchial lymph nodes. Absorption into the lymphatics emptying into the superior vena cava is carried by way of the pulmonary circulation to the pulmonary tissues, setting up therein the fibrosis so commonly observed in these chronic infections (Figs. 1, 2 and 3). This is the type of lung change so frequently seen and once thought to be due to tuberculosis. The confusion is rapidly being cleared by the more frequent use of the tuberculin test. Furthermore, free pus in the nasopharynx may be aspirated into the bronchial system to produce the above-mentioned changes, or it may be swallowed to cause the gastrointestinal disturbance commonly encountered.

TABLE 1

Symptoms in 76 Cases of Chronic Sinus Disease

Ages 6 months to 12 years

ANEMIA, ANOREXIA, MALNUTRITION	COUGH, BRONCHITIS, PNEUMONIA			RHINITIS, PURULENT	TEMPERATURE, PERSISTENT, RECURRENT	OTITIS MEDIA	ADENITIS	MASTOIDITIS
	C	B	P					
43	26	41	7	29	28	25	16	12

Allergic Evidence

NO HISTORY OR CLINICAL EVIDENCE OF ALLERGY	POSITIVE FAMILY HISTORY AND CLINICAL EVIDENCE	POSITIVE TO SKIN TESTS
58	14	4

TONSILS AND ADENOIDS		X-RAY FINDINGS IN CHEST	
Out 1-5 years	In	Sinobronchitis	Negative
40	36	22	3

These secondary symptoms are familiar to us all. We blame environment, contact infection, avitaminosis, susceptibility, etc., for their causation. However, if a careful history is taken and the proper evaluation of the nose and throat examination made, sinusitis is readily interpreted as the focus in many instances. These secondary symptoms often overshadow the sinusitis. This is well illustrated by the history of a boy (D. W.) 7 years of age, when first seen in October, 1934. The mother stated that he had contracted a cold on discharge from a maternity

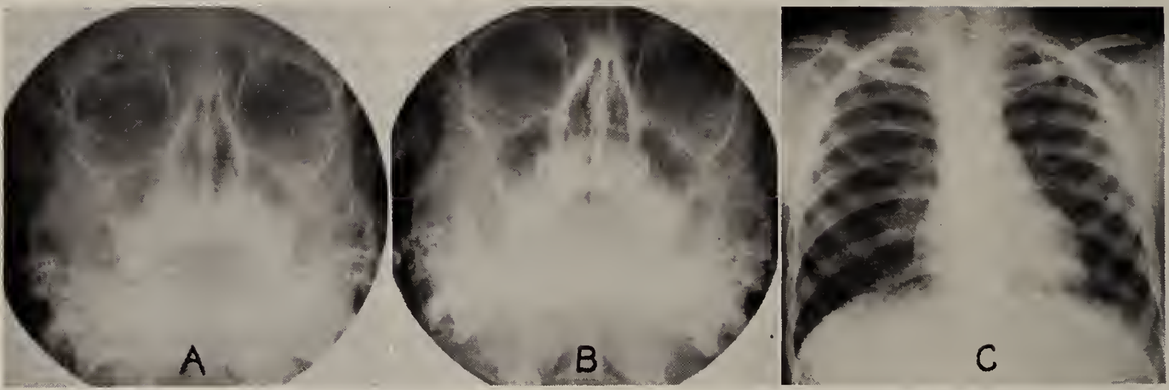

Fig. 1. Case 1. Boy of 7 with frequent colds followed by persistent cough that continued through each of his 7 winters. (A) Sinuses before roentgen therapy, October, 1934; (B) After treatment; (C) Sinobronchitis. Has been well to date.

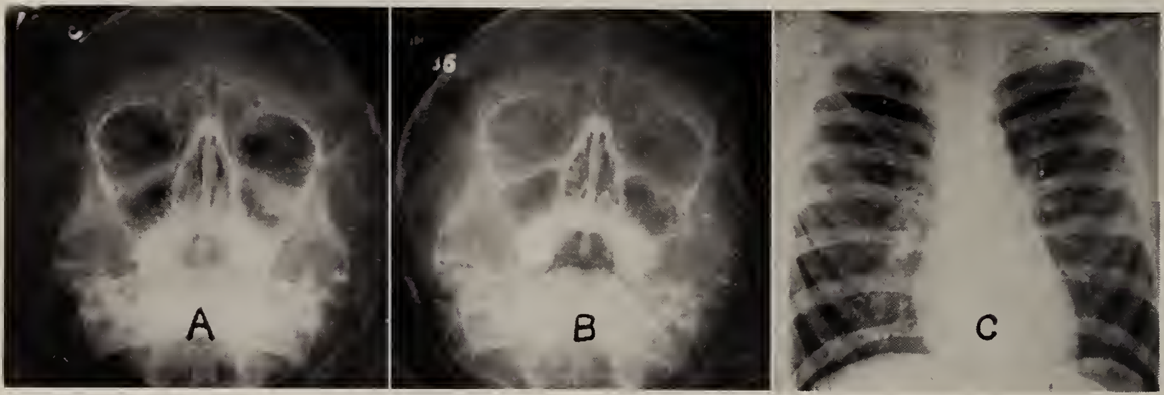

Fig. 2. Case 2. Girl of 8 with persistent cough of 6 months' duration. Sinuses clear to transillumination. (A) Large polyp in left antrum; (B) Sinuses have remained clear for 2½ years; (C) Typical sinobronchitis.

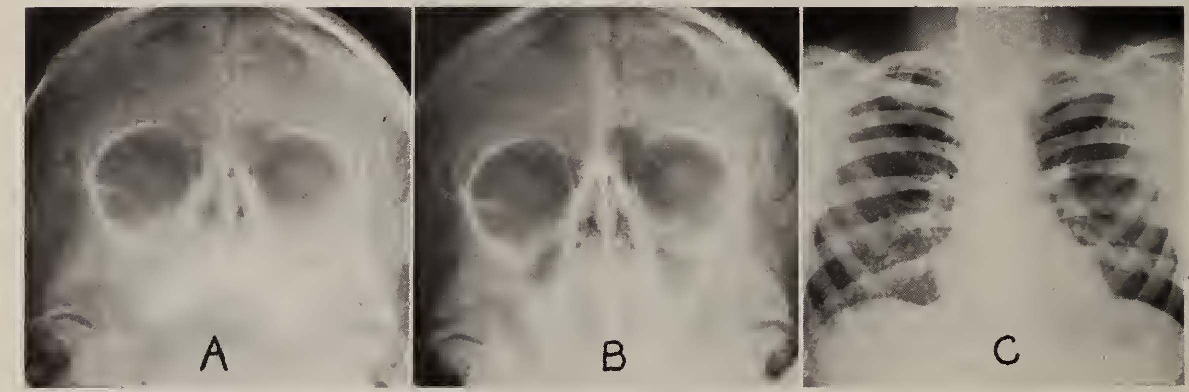

Fig. 3. Case 3. Boy of 7 with frequent attacks of asthmatic bronchitis from age of 15 months. Allergic to foods. Removal of foods, vaccine therapy, tonsillectomy, cauterization of turbinates gave no relief. (A) Sinuses cloudy· (B) Residual thickening of mucous membranes after 9 months; (C) Sinobronchitis. Clinically much improved.

hospital at the age of two weeks. This "cold" had continued for some weeks and was accompanied by a persistent cough. There had been a recurrence of the cough each winter thereafter up to the present. The cough began in the early fall with the advent of cool weather and continued throughout the winter months. The cough was so severe and paroxysmal that a diagnosis of pertussis had been made on three separate occasions. Tonsils and adenoids were removed when the boy was 5 without relief. This child had lived in the South during all of this period. When seen the diagnosis of sinobronchitis was made and corroborated by means of X-ray films (Fig. 1A). Treatment was given with cessation of the cough within the month without any recurrence to date. Clearing of the sinuses is shown in Fig. 1B. (This case is later referred to as Case 1.)

In reviewing the literature one is astounded at the high incidence of sinusitis reported. These reports seem unreliable until a closer scrutiny is made of one's own practice. Wasson and Waltz[13] found 73 per cent positive on X-ray examination in a group of 96 supposedly healthy children. Nippe,[14] Campbell,[15] Leroux,[16] and Dean[17] called attention to the frequency of sinusitis encountered, while Cantor[18] reported 67 per cent sinusitis in 100 consecutive admissions to the Ear, Nose and Throat Clinic at the Children's Hospital in Melbourne, Australia. The X-ray department at the Children's Hospital in this city in June, 1937, examined 43 children with a suggestive history of sinus disease. Of these only 4 had normal sinuses. The remaining 39 children had symptoms as follows: asthma 5, cervical adenitis 5, otitis media 7, chronic cough 6, pneumonia 3, obscure fever 2, retropharyngeal swelling with respiratory difficulty 4, rhinitis 7. Kaiser[19] reported 316 cases of sinus infection in which 47 per cent had had tonsils and adenoids removed. Ten years after removal of tonsils and adenoids in a group of 1,000 children, 11.4 per cent were found to have sinusitis, while 13.5 per cent showed infection in the control group of 1,000 for whom the operation was advised but not done.

The diagnosis of sinusitis becomes relatively easy if one bears in mind the history, the pathologic connection of the complaint to an infectious focus, the condition of the nasopharynx, and lastly the X-ray evidence. Transillumination is of little value, while examination of children with the nasopharyngoscope and antroscope should be reserved for the exceptional case.

The history should include very careful questioning regarding the occurrence of colds, their recurrence, and complications as mentioned above.

The condition of the nose and throat presents a fairly characteristic picture. The ear drums may be slightly thickened and grayish with marginal redness or distortion of the cone of light due to retraction. The nose is partially blocked on one or both sides by enlarged turbinates which are reddened and bathed with a larger or smaller amount of yellowish green mucopus. The nasal mucous membrane may be exceedingly red but not swollen and have thick shreds of pus adherent to it. Again, pus may be seen exuding from the antral meatus or filling the lower part of the nasal cavity. When the tonsils are present there is a varying degree of redness and swelling involving the tonsils and the pharyngeal lymphoid tissue. When the tonsils have been removed, the lymphoid tissue on the pharyngeal wall, and especially the large mass behind the posterior tonsillar pillar, appears more reddened and hypertrophied, while the margin of the soft palate and pillars may be congested. In either instance strings of mucopus may be seen adherent to the pharyngeal wall. Cervical adenitis may be noted to an abnormal degree, and when present in the posterior triangle, sinus infection is invariably the causative factor, barring contiguous skin lesions.

Under these conditions, X-ray examination is indicated, and only by this method can one be sure of the conditions present. The anteroposterior view will show thickening of the mucous membrane or general clouding of the antra or ethmoids as well as the amount of nasal air space. But this is not enough, since the lateral view in many instances shows fully as much evidence of disease (Fig. 4). Besides the sphenoid, which has been found infected alone in several instances, the nasopharyngeal space is clearly visualized. It is indeed surprising to see the marked narrowing of the airway with adenoid hypertrophy or the equally important swelling of the retropharyngeal nodes. On several occasions dyspnea has been explained by a hitherto unsuspected pharyngeal mass, occasionally so low down as not to be visualized by ordinary throat inspection or felt with the palpating finger. This visualization of pharyngeal lesions cannot be too strongly emphasized in evaluating the anticipated improvements in removal of tonsils and adenoids. Spielberg[20] called particular attention to the appalling slaughter of tonsils and adenoids with no attention to the coexisting sinusitis. He strongly advised X-ray examination of the sinuses before operation and gave as his opinion that vaccine therapy is of marked benefit before operating in these complicated cases.

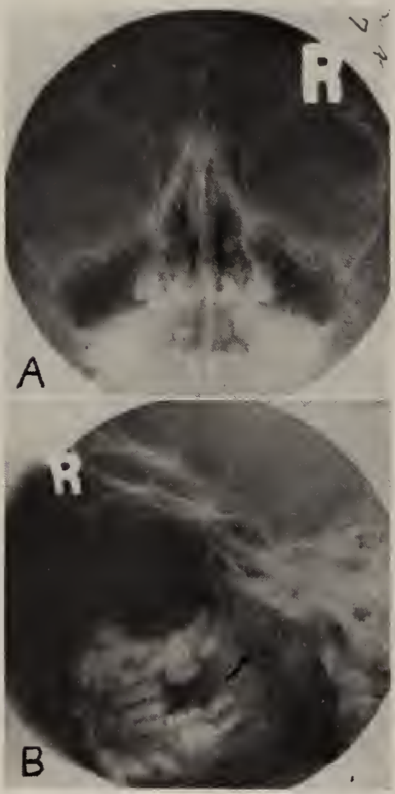

Fig. 4. Case 4. Boy of 6 with persistent sniffling and nasal discharge for 3 years. Tonsils and adenoids removed (?) a year ago. X-ray showed sinuses clear (A), but marked blocking of postnasal air space (B). Illustrative of value lateral view.

The rationale of any treatment for a disease is measured in its efficiency by the number of substitutes. For diphtheria there is one and only one cure, for sinusitis a dozen aids and no one cure. Each gives relief in a percentage of cases. In children the factor of coöperation plays an important part in the treatment. Few other conditions seem to disturb a child more than nasal manipulations. Even the administration of nose drops is a struggle for the average parent or physician. Mithoefer,[21] Spielberg,[20] Burman,[22] Faulkner,[23] and many others speak of the great difficulty in treating nasal infections in children. This psychologic factor cannot be

TABLE 2

Clinical Evaluation of Treatment

NUMBER OF CASES	NOT IMPROVED	SLIGHTLY IMPROVED	MUCH IMPROVED	CURED
50	3 or 6% 2 allergic 1 had no adenoids	5 or 10%	20 or 40%	22 or 44%

Roentgen Evaluation of Treatment

NUMBER OF CASES	NOT IMPROVED	SLIGHTLY IMPROVED	MUCH IMPROVED	CURED
48	5 or 10% 3 allergic 1 had no adenoids 1 no explanation	6 or 12%	20 or 41%	17 or 35%

Time Followed

UNDER 1 YR.	OVER 1 YR.	OVER 2 YRS.	OVER 3 YRS.
22	12	13	3

2 cases showed recurrence after 1 and 2 years respectively (Case 5, Fig. 5).

17 cases had previous treatment directed to sinuses, 2 had been operated upon.

3 of the allergic skin positive cases had "elimination and desensitization" treatment without result. One of these was much improved by roentgen therapy (Case 3). All 14 cases with family history of allergy and clinical evidence of allergy (principally to foods) responded favorably to roentgen therapy. Case 6 is not included in this chart.

too strongly emphasized. Still another method of treatment is being advocated without a conclusion as yet of its absolute efficacy. X-ray treatment, barring certain types of sinusitis, seems to be more beneficial than other methods heretofore used. The basis for this statement is contained in the evidence of results presented in Table 2. It is hoped that with further experience and the elimination of a few unsuitable cases, more definite prognosis can be given. The method of treatment employed is that worked out by Dr. R. R. Rathbone at the Children's Hospital in this city. The details and technic are given in his paper in the American Journal of Roentgenology, July, 1937.

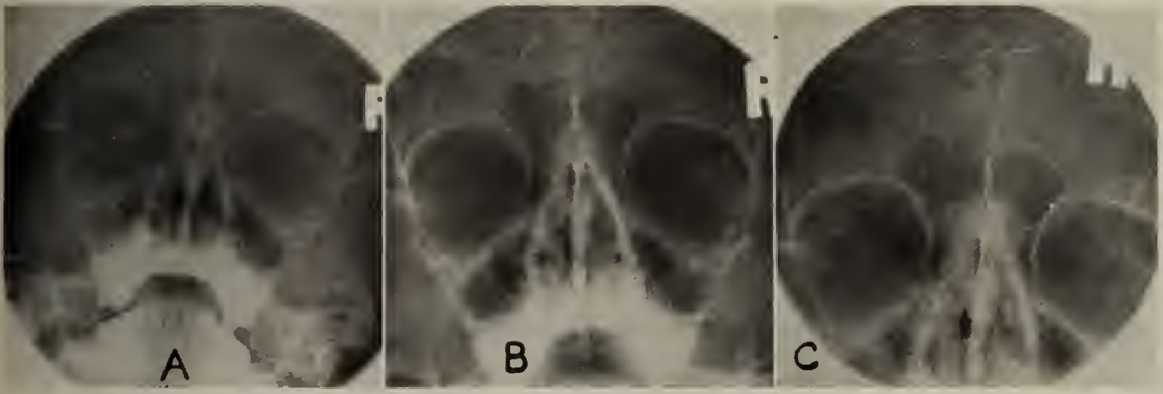

Fig. 5. Case 5. Boy aged 8 with recurrent cough, nasal discharge, anemia. (A) Sinuses cloudy; (B) Improved for 18 months following roentgen therapy; (C) Recurrence of sinus infection and clinical symptoms. Second treatment with improvement to date.

Since the purpose of this paper is to show the results obtained with roentgen therapy, no details will be presented relative to the usual management. Vaccines, topical applications, irrigations and operations may all be beneficial in certain cases. General hygienic measures, change of climate, and the optimum vitamin and food intake should have their proper evaluation under all conditions.

Three questions present themselves: Is the treatment harmless? X-ray damage is certainly a pertinent reason for fearing such a method of treatment. In over 400 cases treated, there has been no ill effect noted. The amount of X-rays given, measured in roentgen units, is less than that necessary to epilate the scalp for ringworm, a procedure used at Children's Hospital for the past 18 years without an untoward reaction. Five years have elapsed since the first roentgen treatment for sinusitis was given at Children's Hospital, and no sequelae have been reported. A group of children treated for enlarged thymus were followed in Philadelphia for more than 15 years and no ill effects could be detected. Dryness of the nose has not been noted in any of the cases. The cilia of the mucous membrane has been stimulated rather than harmed by reasonable X-ray exposure, according to Fenton and Larsell[24] and Heine.[25]

The second question is: Why is X-ray treatment beneficial and how does it work? The experimental work and theoretical deductions therefor of Fenton and Larsell[24] and Desjardins[26] seem tenable. In discussing roentgen therapy in acute and chronic inflammatory conditions, they show that the lymphocytes, the polymorphonuclear leukocytes and the eosinophils are the most susceptible cells to roentgen rays. These are destroyed, and in the process of destruction, liberate their antibodies, ferments and protective substances. The reticulocytes or macrophages increase their phagocytosis. They can be seen in the tissues with ingested bacteria and the débris of the destroyed cells. They point out that the greater the infiltration of the tissues by these cells, the more favorable is the effect of X-ray exposure, the infiltrative stage responding more favorably than the suppurative. I can do no better than to quote Desjardins, as follows: " . . . I can testify that, although in some cases radiotherapy has not had a favorable effect, an unfavorable action has never been observed. . . . All clinical circumstances indicate that inflammatory lesions respond to irradiation in proportion to the degree of leukocytic infiltration. . . . The greater the degree of leukocytic infiltration in proportion to connective tissue proliferation, the more marked and the more rapid is the influence of the treatment, and vice versa."

Lastly, are the results obtained to date justification for further trial and investigation? Table 2 indicates the results in the 50 cases. The following case histories illustrate the excellent results obtained in certain types of cases (Cases 1, 2 and 3), the value of lateral roentgen examination (Case 4), the recurrence of infection (Case 5), and the complete failure of treatment in Cases 6 and 7.

ILLUSTRATIVE CASES

Case 1: Described above.

Case 2: J. H., a white girl, aged 8, had a negative history except for difficulty in feeding during early life and apparent allergy to wheat. When seen (May, 1935) she had had a persistent cough for 6 months which had been treated by topical applications about the nasopharynx. Transillumination showed no sinus infection, as reported to the mother. Roentgen examination of the sinuses showed marked thickening of the mucous membranes of the antra with a large polyp in the left (Fig. 2 A). X-ray treatment was given in May, 1935, and in 4 weeks the cough had ceased and has not recurred to date, despite summers spent in local swimming pools (Fig. 2 B). This case was examined and treated by Dr. Claude Moore.

Case 3: E. R., a white boy, aged 7, gave a history of "asthmatic bronchitis" which made its appearance first at the age of 15 months. A number of foods to which he was apparently allergic were eliminated from the diet without results. Vaccine therapy and removal of tonsils and adenoids likewise proved ineffectual in reducing the frequently recurring attacks of asthmatic bronchitis, nasal discharge and "colds." In 1935 the turbinates were cauterized, which procedure did not improve the general condition. During school age he had not been able to attend for more than one half of the time. He was seen in December, 1936, and the sinuses found cloudy as indicated in Fig. 3 A. Roentgen treatment was given at that time. During the next year and a half he was able to attend school more than 75 per cent of the time and had no severe attack of bronchitis or other respiratory illness. In this instance the clinical improvement has far exceeded the X-ray evidence of improvement as indicated in Fig. 3 B.

Case 4: G. L., a white boy, aged 6, had had persistent nasal "sniffling" and discharge for about 3 years. One year before, the tonsils and adenoids had been removed for the above symptoms. During the preceding 10 months the symptoms had continued. The X-ray plate showed clear sinuses but almost a complete occlusion of the postnasal air space due to a large mass of adenoid tissue not removed at the time of operation (Fig. 4). The removal of this mass has resulted in the complete recovery from the annoying symptoms. The value of the lateral X-ray examination is illustrated in this instance.

Case 5: N. W., a white boy, aged 8, had been seen on numerous occasions with persistent coughs, nasal discharge and other evidences of recurring "colds." After several of these attacks anemia had been the common sequela. In June, 1936, the sinuses were found to be involved (Fig. 5 A) and treatment was effectual in materially reducing the number and severity of colds as well as clearing up the sinusitis (Fig. 5 B). However, in December, 1937, the sinuses were again found to be cloudy (Fig. 5 C). A second course of treatment was given at this time and clinical improvement has persisted.

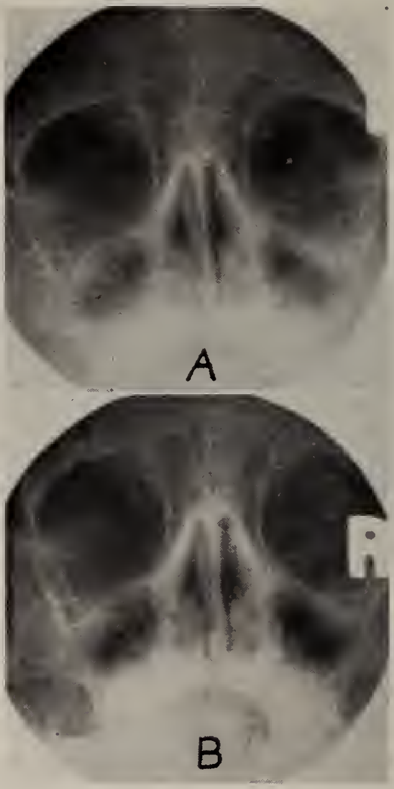

FIG. 6. Case 6. Girl aged 8, with asthma since 8 months of age. Desensitization to reacting proteins ineffectual on four attempts. Tonsillectomy, vaccine, lipiodol, ineffectual. No clinical or X-ray improvement after roentgen therapy (A and B).

Case 6: J. O., a white girl, aged 8, had been under observation for about 5 years, during which time she had had a continuous asthmatic type of breathing with marked exacerbations at frequent intervals. This history dates back to the age of 8 months. When "cold" or throat infection occurred with temperature, there was always a subsidence of the asthmatic symptoms. She had been tested on several occasions and found to be allergic to a large number of foods, pollens, etc. Attempted desensitization had not improved her condition whatsoever. Tonsils and adenoids were removed and autogenous vaccines given without results. Lipiodol was used intratracheally over a period of several weeks but gave no relief. X-ray examination showed marked involvement of all the sinuses (Fig. 6 A). She was treated in the usual way with roentgen rays, and neither clinical nor X-ray improvement followed. This child has since removed to the Southwest, and a year's residence has been of very little benefit. This case illustrates a complete failure in a patient with pronounced allergy.

Case 7: D. W., a white boy, aged 8 months, developed a cough shortly after the appearance of a "cold" in the older sister. Profuse nasal discharge with anorexia and loss of weight occurred. With the persistence of the cough for about 3 weeks roentgen examination of the sinuses showed the antra to be entirely opaque (Fig. 7 A). Treatment was given over the sinuses and chest. There was some clinical improvement in the cough, but later X-ray films (Fig. 7 B) showed no evidence of improvement in the appearance of the antra. In this case there was apparently no retropharyngeal lymphoid mass, and clinically the tonsils appeared throughout the illness quite small and non-inflammatory. It was suggested that lack of improvement was due in large measure to the absence of the usual amount of lymphoid tissue in the nasopharynx.

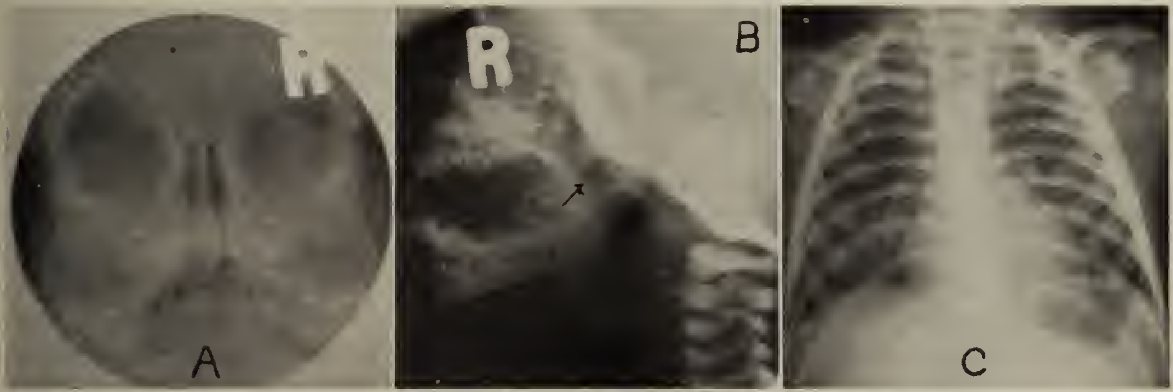

Fig. 7. Case 7. Boy aged 8 months. Coughed for 3 weeks. X-ray showed clouding of antra (A); (B) Wide postnasal air space, absent adenoid mass (?), small tonsils; (C) Sinobronchitis. Roentgen therapy gave no results. Sparse lymphoid tissue might explain lack of improvement.

SUMMARY

1. Attention is called to the frequency of chronic sinus disease in children following upper respiratory infections and other infectious diseases including the exanthemata. The allergic factor in sinus disease is believed to be due in the majority of cases to the mechanical obstruction to normal sinus drainage.

2. Chronic sinus disease produces few local signs and symptoms; manifestations are usually remote, such as malnutrition and anemia, cough, persistent or recurrent fever, and aural infections.

3. Careful examination of the ears, nose and throat usually reveals evidence of sinus infection. Roentgen examination of sinuses anteroposteriorly and laterally is essential in the diagnosis of chronic infection with or without postnasal obstruction.

4. The results of roentgen therapy in 50 private cases warrant a continuation of this therapeutic procedure.

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VALUE OF COMBINED MEASUREMENTS OF CIRCULATION TIME AND VENOUS PRESSURE IN HEART FAILURE*

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In recent years increasing attention has been given to the use of special tests in the diagnosis and study of the course of congestive heart failure. Measurements of the venous blood pressure and the rate of circulation of the blood are simple procedures requiring little experience in their application and interpretation. Such measurements can be made repeatedly on the same patient, each repetition of the group of circulation tests requiring only a single venipuncture. For these reasons they are being more and more frequently employed, particularly in cases in which the usual methods of estimation of cardiac function prove inadequate or inaccurate. Other tests, such as estimation of vital capacity, blood volume, and cardiac output, have less to recommend them, mainly because of technical difficulties incident to their general use.

Circulation Time

In practice the circulation time is determined by measuring the time elapsing between the injection of a drug into an antecubital vein and the moment of perception of a sensation imparted by the drug in the nose, throat, or tongue of the patient. Drugs like ether and paraldehyde, which are excreted in the lungs and are perceived by the olfactory or respiratory membrane of the patient, are used for measurement of the arm-to-lung circulation time. Drugs like saccharin, calcium gluconate, and sodium dehydrocholate, which are perceived by the sense organs in the tongue or throat following intravenous injection, can be used similarly for the arm-to-tongue circulation time. The difference between the arm-to-tongue and arm-to-lung times is the lung-to-tongue circulation time.

The arm-to-lung circulation time measures the rate of circulation from an antecubital vein through the systemic veins, the right auricle and ventricle, and the pulmonary arteries to the capillaries of the lungs. For this purpose Hitzig, King, and Fishberg[1] have reported the use of ether. A mixture of 5 minims of ether and an equal quantity of sterile physiologic saline solution is injected rapidly into an antecubital vein, the patient being instructed previously to say "now" at the moment he first notices the odor of the substance. The time from beginning of injection to "now" is measured in seconds, preferably with a stop watch. In most cases the time can be confirmed by the operator's own sense of smell. In normal cases it varies between 3.5 and 8 seconds. Difficulties of performance of the tests will be avoided if the patient is warned to expect slight pain along the course of the veins in the arm and is instructed not to permit his eagerness to coöperate in smelling the ether to interfere with the regularity of his breathing. In my experience the use of ether has the following disadvantages: It causes pain, which may in turn cause the patient to hold his breath, it depends upon purely subjective confirmation, and rarely it causes venous thrombosis. However, for most patients ether is entirely satisfactory and has the important advantages that it requires no sterilization, is readily available, and is inexpensive.

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* Read before the Society, October 26, 1938.

Recently Candel[2] has reported the use of paraldehyde for determination of the arm-to-lung circulation time. He recommends a dose of 1.4 c.c. of the drug for the test and has found in a series of 100 patients with apparently normal cardiovascular systems that the circulation time ranges between 3 and 9.5 seconds. Paraldehyde, on reaching the pulmonary capillaries after intravenous injection, produces a sharp cough which usually lasts from 1 to 3 minutes. This cough is taken as the end-point of the reaction and, since it is purely objective, constitutes the chief superiority of paraldehyde over ether. However, Candel mentions that theoretically, at least, it might seem unwise to provoke paroxysms of coughing in cardiac patients, for whom the test would most frequently be indicated.

The arm-to-tongue circulation time measures the rate of circulation from an antecubital vein through the systemic veins, the right auricle and ventricle, the pulmonary arteries, capillaries and veins, the left auricle and ventricle, and the systemic arteries to the capillaries of the tongue or throat. Saccharin, calcium gluconate, and sodium dehydrocholate (decholin) are the most generally useful drugs, although all three have the common disadvantage that their perception is purely subjective, therefore depending upon the coöperation of the patient in much the same way as for the ether test. Saccharin is used as a saturated solution of the soluble form (2.5 c.c.) and is recognized by its sweet taste. Decholin is used as a 20 per cent solution (3 to 5 c.c.) and imparts a bitter taste. Calcium gluconate is used preferably as a 20 per cent solution (2.5 c.c.) and produces a sensation of heat in the throat and tongue. Normally the time from the moment of beginning injection of one of these drugs until it is perceived in the throat or tongue and the patient cries "now" varies between 9 and 16 seconds.

Disadvantages and dangers of use of the drugs mentioned for the arm-to-tongue circulation time, besides the fact that they produce no objective manifestation, are comparatively minor. Saccharin often causes slight pain along the course of the injected vein, not infrequently leads to thrombosis, and may give severe pain when injected outside the vein. Administration of calcium intravenously to patients receiving digitalis is not without danger, because of the additive effect of these two drugs upon the myocardium. Golden and Brams[3] recently have reëxamined this question and believe that calcium should not be given to any patient receiving digitalis. However, no death has been reported incidental to the use of calcium in studying the circulation time, and in a series of approximately 150 injections Baer and Slipakoff[4] observed only 1 reaction. This was a case of myocardial infarction in which the initial injection of calcium gluconate produced severe precordial pain. I have made 70 injections of 20 per cent calcium gluconate (2.5 to 3 c.c.) with no untoward reactions in one group of 28 cases of heart failure in all of which digitalis was being given.

The lung-to-tongue circulation time is determined by subtracting the arm-to-lung time from the arm-to-tongue time. Normally it varies between 5 and 10 seconds.

VENOUS PRESSURE

Measurement of the blood pressure in the peripheral veins is the simplest, safest, least expensive, and most objective test of cardiac function, although alone it is not a means for detection of all cases of heart failure. In a previous paper[5] I have given an analysis of venous pressure regulation, the methods for its measurement, and the influences upon it of various pathologic conditions. The most practical method of measurement is the direct, whereby the pressure is determined by the height of a column of liquid sustained through an intravenous needle connected to a glass measuring tube. I have always employed the method and apparatus devised by Griffith, Chamberlain, and Kitchell.[6] A description of the technic, quoted from my previous paper, follows:

The apparatus consists of a 20-gauge needle and a 2 c.c. syringe having a sidearm to which a calibrated glass measuring tube is connected by means of a rubber tubing of about the size of a 14 F. catheter. The other end of the glass tube is connected by means of another short piece of rubber tubing to a glass reservoir of any description. The entire apparatus can be sterilized by boiling. Physiologic salt solution is placed in the reservoir and allowed to fill the set, which is then ready to use. The patient is placed in supine position, a vein is selected in one of the antecubital fossae, and the needle of the apparatus is introduced into the vein following the usual technic for intravenous medication. The plunger of the syringe is drawn back allowing saline to run through the sidearm into the syringe and thence into the vein. Next, the reservoir is detached from the apparatus, and the zero point of the calibrated tube is placed on a plane with the midaxillary line of the patient. This plane has been selected arbitrarily as approximately level with the right atrium of the heart and as a simple means of standardization of readings. The saline will continue to fall in the glass tube, fluctuating somewhat with respiration, and stopping at a point which indicates the height of the venous blood pressure in terms of millimeters of saline. Using this technic it has been found that normal persons have a peripheral venous blood pressure of 40 to 120 mm. of saline.

CIRCULATION TIME AND VENOUS PRESSURE IN HEART FAILURE

Prolongation of circulation times and elevation of the blood pressure in the peripheral veins practically always indicates heart failure. The only exceptions are in cases of localized venous obstruction, cardiac compression, polycythemia, and myxedema. Oppenheimer and Hitzig[7] have shown that pulmonary insufficiency uncomplicated by heart failure is accompanied by normal circulation rates and venous pressure.

In cases of complete heart failure, that is, failure of both ventricles, the venous pressure is elevated and the arm-to-lung and arm-to-tongue circulation times are prolonged proportionally. In severe heart failure the blood pressure in the peripheral veins may rise to 150 to 300 mm. or more of saline, the arm-to-lung circulation time may be prolonged to 10 to 30 seconds (rarely longer), and the arm-to-tongue circulation time may be prolonged to 25 to 90 seconds (rarely longer). If repeated measurements are made in such cases during the time of treatment of the heart failure, improvement will first be manifest by approach of the venous pressure and arm-to-lung circulation time to normal limits, with comparatively less change in the arm-to-tongue circulation time at first. Finally the arm-to-tongue circulation time may become normal, although in some cases in which the other two measurements have long since been normal and physical signs of heart failure have disappeared the arm-to-tongue circulation time remains prolonged, indicating persistent left ventricular failure.

In cases of mild complete heart failure in which circulation tests are made for the first time after the patient has been resting in bed for several days and in cases of left ventricular failure without clinical evidence of right ventricular failure, the initial venous pressure measurement and arm-to-lung circulation time usually are normal, but the arm-to-tongue circulation time is prolonged, often greatly. In such cases it is sometimes possible to demonstrate a rise of venous pressure of 10 to 50 mm. of saline when the right upper quadrant of the abdomen is compressed for about a minute, as described by Oppenheimer and Hitzig.[7] This finding is interpreted as indication of incipient right ventricular failure.

In cases of right ventricular failure due to pulmonary disease or to other rarer causes unassociated with disease or failure of the left side of the heart, the venous pressure is elevated and the arm-to-lung circulation time is prolonged, but the arm-to-tongue circulation time is nearly normal, so that the lung-to-tongue circulation time remains within normal limits. Incipient right ventricular failure without disease or failure of the left side of the heart is attended by normal initial measurements, but can be detected by the rise in venous pressure when the abdomen is compressed in the manner described above.

COMMENT

The circulation tests described in this paper can be employed singly with considerable diagnostic value. However, it is obvious from the foregoing discussion that no one of them is adequate for an accurate diagnostic understanding of all cases of heart failure (see Table 1). For this purpose they are best used simultaneously. This can be done with a single venipuncture, the arm-to-tongue circulation time being measured first, the venous pressure next, and the arm-to-lung circulation time last. The value of the tests as a means of differential diagnosis in cases of edema and dyspnea of obscure etiology cannot be emphasized too strongly. In disease conditions such as pneumonia, coronary thrombosis, and cerebral vascular accident, more or less routine use of the tests leads to the early detection of complicating heart failure, which often is unsuspected because its manifestations are masked by symptoms of the original condition. Repeated use of the tests in all cases of heart failure is valuable as an objective means of determination of improvement or aggravation of the failure. In this connection, I have found the tests to have a most fruitful use in appraising the preparation for operation of a patient with pre-existing heart failure.

TABLE 1

Circulation Measurements in Various Types of Heart Failure

	NORMAL	COMPLETE HEART FAILURE	ISOLATED LEFT VENTRICULAR FAILURE	ISOLATED RIGHT VENTRICULAR FAILURE	ISOLATED INCIPIENT RIGHT VENTRICULAR FAILURE
Initial Venous Pressure....	40–120 mm. of saline	Above 150 mm.	Normal	Above 150 mm.	Normal
Venous Pressure after Abdominal Compression...	No rise	Rise of 10–50 mm.	No rise	Rise of 10–50 mm.	Rise of 10–50 mm.
Arm-to-lung Time.........	3.5–8 sec. (ether)	Prolonged	Normal	Prolonged	Normal or slightly prolonged
Arm-to-tongue Time.......	9–16 sec. (Ca gluconate)	Prolonged	Prolonged	Slightly prolonged	Normal
Lung-to-tongue Time......	5–10 sec.	Prolonged	Prolonged	Normal	Normal

SUMMARY

1. A discussion of methods for measuring the arm-to-lung, arm-to-tongue, and lung-to-tongue circulation times and the venous blood pressure is given.

2. The influence of various types of heart failure upon the findings in these tests is indicated (see Table 1), and the value of simultaneous employment of the tests in cases of heart failure is emphasized.

3. The importance of the tests is reiterated in the differential diagnosis of edema and dyspnea, for the early detection of complicating heart failure in disease conditions such as pneumonia, coronary thrombosis, and cerebral vascular accident, and in following the course of heart failure.

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CHRONIC CONSTRICTIVE PERICARDITIS (CHRONIC CARDIAC COMPRESSION)

REPORT OF THREE CASES SUCCESSFULLY OPERATED ON

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Although most cases of disease of the heart are the diagnostic and therapeutic problems of the general practitioner and internist, there are some diseases affecting the heart in the handling of which the surgeon plays the prominent rôle. Two of these are diseases in which the heart weakness is treated indirectly, usually with recovery, namely, hyperthyroidism and arteriovenous fistula, both with secondary heart failure. Purulent pericarditis and constrictive pericarditis are diseases requiring direct surgical approach, in addition to traumatic conditions. Various surgical procedures have been devised for relieving angina pectoris, with a moderate degree of success. An interesting operation has also been employed to provide the myocardium with a new blood supply.

Chronic constrictive pericarditis is not a common disease, but if not recognized the patient is done a grave injustice. Friedel Pick in 1896 was the first to accurately describe it, and it became known as Pick's disease or Pick's syndrome. As suggested recently by Beck it should more properly be designated chronic cardiac compression, since the cause of this syndrome is variable. Adhesive pericarditis must never be confused with this condition, since it practically never causes chronic cardiac compression and is in fact of no clinical significance nor even recognizable clinically.

Due to the writings of Beck,[1, 2, 3] White,[4] and others,[5,6,7,8] the clinical syndrome of chronic cardiac compression is well known. The diagnostic triad of Beck includes (1) ascites, (2) high venous pressure and (3) a small quiet heart. This group of signs is pathognomonic. White listed the following as the leading diagnostic clues: (1) the insidious onset of dropsy in a young person, (2) preponderant liver enlargement and ascites, (3) increased prominence of the jugular veins, (4) normal or relatively normal heart in the presence of dropsy without nephritis, (5) low blood (arterial) and pulse pressures and paradoxical pulse, (6) X-ray evidence (poor pulsation, calcification, or chronic pleuritis), (7) electrocardiography (low voltage or 'coronary' T waves in chronic disease in early youth), and (8) a previous history of acute pericarditis and polyserositis. Fixation of the heart in the chest is usually present, but not necessarily. The same applies likewise and naturally to failure of shift of the electrical axis of the electrocardiogram with change of position of the body. Broadbent's sign, so frequently mentioned, is practically never present.

The etiology is often unknown. In many cases the pericardium is thickened and adherent, with or without extrapericardial adhesions; there may or may not have been a history of acute pericarditis or polyserositis. In some cases tuberculosis is definitely responsible, in which event there is usually calcification of the pericardium. Rheumatic fever is rarely if ever the cause, and rheumatic heart disease is not an associated condition. The finding of valvular disease actually precludes the diagnosis of chronic constrictive pericarditis.

The clinical features of chronic cardiac compression can be most graphically presented by recounting the three cases which constitute the basis of this report.

Report of Cases

Case 1. Mrs. I. M., a white woman, aged 31 years, an unemployed clerk, was admitted to the Georgetown University Hospital on May 3, 1932, complaining of swelling of the abdomen and ankles and attacks of orthopnea and weakness. She had had frequent attacks of tonsillitis before a tonsillectomy 15 years before. There had been one pregnancy in 1924 terminated by abortion. In 1926 she had had an illness of 9 months, the main complaints of which were burning in the region of the heart, pain in the left shoulder and arm, pain in the left lower quadrant and dyspnea. A diagnosis was not made. In the Spring of 1928, the patient complained again of dyspnea on exertion, of some precordial pain and some pain in the left shoulder, which radiated down the arm to the elbow. She was sent to a local hospital where a diagnosis of pericarditis with effusion and rheumatic heart disease was made. A review of the roentgenograms shows the pericarditis with effusion. This condition subsided during the course of about 2 months. The patient was fairly well until August, 1931, when she began to notice distension of the abdomen and swelling of the ankles. In the morning there was also noticed swelling of the face. Menorrhagia began about August, 1931, and continued. Spells of weakness occurred monthly in relation to menstruation and these were associated with orthopnea.

Examination on May 3, 1932, revealed a slender but fairly well nourished woman, who did not appear to be very ill. The face was slightly puffy. The heart was apparently not enlarged. The apical impulse was not visible but was palpable in the 5th interspace, 7.5 cm. from the midsternal line. The rhythm was regular and the rate 90 per minute. There were no murmurs. The heart did not appear to shift with change of position. The lungs were negative. The abdomen was moderately distended and there was definite evidence of ascites. The ankles were somewhat edematous. Roentgenographic examination showed the heart to be deformed in shape and to extend as far toward the right as it did toward the left, both about 7.4 cm. There was very little pulsation about the left border of the heart and none along the right border. The heart did not shift with change of position. A diagnosis of chronic constrictive pericarditis with Pick's syndrome was made. The venous pressure was not estimated. The patient was treated by fluid restriction and injections of salyrgan, but her response, while at first fairly satisfactory, became progressively less so, until in October, 1932, ascites was greater. There was more dyspnea and even moderate orthopnea, some edema of the ankles, occasional puffiness of the face, more severe pain in the left shoulder and increased weakness. Moderate exertion produced cyanosis of the lips and finger nails and coldness of the extremities. It was decided that operation was essential to the patient's improvement.

On January 16, 1933, she entered the Lakeside Hospital, Cleveland, Ohio, as a patient of Dr. Claude S. Beck. The jugular veins at that time were quite prominent and the venous pressure was 250 mm. of saline. Abdominal paracentesis was performed with the removal of 7000 c.c. of clear, straw-colored fluid. The liver was then palpable 4 cm. below the right costal margin. The blood pressure was 104/80 and the pulse rate 88 per minute. Dr. Beck operated upon the patient on February 2, 1933. His operative note is instructive and is given verbatim, as follows:

"The operation was carried out the morning of February 2, 1933. Before the anesthetic was started a vein on the dorsum of the foot was exposed under local anesthesia by Dr. Clark. This vein was then placed in the operative field. A donor was in the adjoining room and Dr. Chambers was scrubbed up to give a transfusion if necessary.

"Gas oxygen anesthesia was then started by Mrs. Fife. Induction was satisfactory. The patient was placed in a semi-Fowler's position. The skin was prepared with alcohol and bichloride. The incision was marked off over the precordium. It was half of the H incision recently described for this operation. The medial portion of the incision lay over the midsternum. This midline incision was about 3 inches long. Lateral incisions to the left were about 2 inches long. When the skin was cut it gave us a curved incision over the precordium. The incision was carried through the subcutaneous structures, the fascia of the pectoral muscle and also the muscles. A flap of soft parts was turned back to the left exposing the cartilages of the 4th, 5th and 6th ribs. There were many blood vessels, and quite a number of black silk ties were used. The perichondrium was then dissected from these three costal cartilages. The cartilages were freed and these were excised. After these were excised the soft tissues were separated from the left border of the sternum and about 1 cm. of the sternum was removed over an area about 4 inches long. The heart and pericardium lay beneath the sternum. The pericardium was adherent here and there to the under surface of the sternum but it was not tightly bound down to the sternum. In two or three places these adhesions were cut with a scissors. The heart was covered by a pad of scar. Movements of the heart were distinctly restricted. Pulsation, however, was present. We then made a longitudinal incision into the scar. The scar was about 3 mm. thick. Something of a plane of cleavage was found and separation in various directions for about 1 cm. was carried out. The incision in the scar at this time was about 3 cm. long. The underlying surface of the heart appeared pale and scarified and I was afraid that the plane of cleavage was superficial to the real plane of cleavage that we desired. I then incised deeper but what we encountered was simply epicardial fat. I then continued the separation of scar toward the base of the heart separating the heart from the scar as we went along. Over the base of the heart the scar became thickened and firmer and we had to do this separation by means of the scissors. The scar was also excised down over the apex. The pericardial cavity was completely obliterated. The scar could not be separated by blunt dissection. Dissection with the scissors and with the knife had to be used to separate the two structures. After this separation had progressed it was noted that the heart actually bulged out through the opening in the scar. The movement of the heart became definitely increased and the anesthetist stated that the circulation was definitely improved. We now proceeded with the dissection more slowly. Dr. Cushing prevented me from doing too much at any one time, and I think he furnished an invaluable aid in protecting the heart from concentrated nerve impulses. The scar on the left side was picked up in clamps and held under tension by the assistants. Little by little the adhesions were incised usually by means of the scissors. Over the base of the left ventricle, however, pretty well around to the left side, I used a little blunt dissection with my finger and as I did so I tore the myocardium. This was followed by a gush of dark blood. The scar was replaced over this portion of the myocardium and slight pressure from the outside stopped the bleeding. We probably lost 20 c.c. of blood at this point. We then dissected over the apex and over the right ventricle. The scar was glued to the heart over the midline and toward the right side and also over the conus arteriosus. This had to be dissected very slowly by means of sharp dissection. The scar over the base of the heart was 4 mm. thick and as we cut it the scar retracted and it was most remarkable to see how pressure on the heart was relieved as the scar was divided. A good bit of the circulatory embarrassment was produced by the scar over the conus area. The heart was freed well up toward the auricles anteriorly, well around to the left, underneath the heart, under the apex and also under the lower portion of the right ventricle. It was completely freed from the anterior surface of the left ventricle and most of the right ventricle. The right auricle was not exposed. The venae cavae were not seen, and the part of the heart which was not dissected was an area posteriorly at the base and extending to the right to include part of the right ventricle. The next step in the operation was the dissection of the pleural sinuses. As we proceeded with this dissection on the left side we cut the pleura and some air entered the left pleural cavity. This opening was readily sutured with 2 or 3 sutures and not very much air got into the pleura. The pleural sinus was dissected posteriorly about 2 to 3 cm. on the left side. I did not dare go any further posteriorly because of the danger of pneumothorax. This limited the amount of pericardial scar that we could actually resect. There was a great deal more that we could have taken as far as the separation from the heart was concerned. The same was true on the right side. The scar was picked up in clamps on the right side. It was drawn toward the left underneath the sternum and the pleural sinus was dissected from the pericardium for a distance of about 2 cm. I was afraid to go any further here. The portion of scar actually taken away measured about 5 by 9 cm. It may have been a little larger than these measurements. The remarkable thing, however, was that the scar retracted so far to each side that the entire anterior aspect of the heart was free from the pericardium. On the left side the scar retracted about half way down the anteroposterior diameter of the ventricle. The heart was now beating with a vigorous systole and diastole. It was apparent that we had effected a great deal of relief, and I was greatly relieved when we decided that we had gone far enough with our dissection. There was some bleeding from the myocardium of the left ventricle in the area referred to, but this was controlled by placing a silk suture in the myocardium. We also got into danger in dissecting the scar from the right ventricle, because I could see a thin film of myocardium stuck to the scar after I had gotten it removed. We did not injure any of the coronary vessels. The surface of the heart was completely freed from epicardial scar. There was some fat on the surface of the heart but no scar. I did not notice any fibrosis of the myocardium. The heart behaved very well. The circulation was in better condition at the end of the operation than it was before the operation started. A little bone wax was used in the sternum to stop oozing of the blood. The field, however, could not be made absolutely dry. The intercostal muscle bundles and the perichondrium were brought into their normal position with a few sutures to the sternum. The pectoral muscle and fascia were sutured in their normal position by two layers of silk sutures. A layer of silk sutures were placed in the subcutaneous tissues and the skin was closed with silk. A small drain was placed in the lower angle of the wound and extended to the surface of the heart. A dressing was applied.

"The pulse and blood pressure were better at the end of the operation. The pulse pressure was definitely increased. Both Dr. Cushing and Mrs. Fife told me that the improvement in the circulation was really dramatic after the scar had been incised and the heart was given some room. The distention of the jugular vein seemed to be less after the operation than before.

"As soon as the anesthetic was stopped the patient awoke and responded. Subsequent notes are found on the progress chart. As I look at the entire picture I feel that the obstruction to the filling of the heart has been greatly relieved. I believe that it is possible that this obstruction has been completely relieved. Although the scarred pericardium was not widely excised it can no longer get a strangle hold on the heart. I am of the opinion that it is not necessary to free the under surface of the ventricles toward the base of the heart. I would like to have exposed the venae cavae and the right auricle but if this proves necessary we shall do it as a second stage. I do not believe it will be necessary. Another point of interest is the question of the excision of the scar. I could have excised more than I did were it not for the pleural attachment. I do not think it worth while running the risk of pneumothorax to make this excision more extensive. An important point is the fact that the scar retracted well around laterally on each side and if it does become attached to the heart again it will not get any real hold on the heart. The pleural sinus on each side came up over the lateral and anterior surface of the ventricle, at the time of closure.

"During the night the negative chamber was placed over the precordium and the patient volunteered the statement that she could breathe better with negative pressure. We have kept the negative chamber on the precordium intermittently since the operation.

"This morning, 24 hours after the operation, I aspirated 40 c.c. of thin bloody fluid from the mediastinum. So far she is doing remarkably well. The circulation has been greatly improved. The systolic pressure is definitely up as high as 110 and the diastolic pressure came up to 70, making a pulse pressure of 40. I look forward to a cure."

The tissue removed at operation was reported as being found to be that of chronic inflammation with thickening and hyalinization of the fibrous membrane.

A progress note made by Dr. Beck on February 7, 1933, is as follows:

"This note is written on the fifth day after operation. The patient has had a most wonderful convalescence. She has been under constant observation both day and night and it has been most gratifying to note the improvement that has been effected. Immediately after the operation we saw an improvement in the mechanics of the circulation. This was evidenced by less distention of the veins and by the fact that we could now easily get the blood pressure, whereas before the operation we could not get the pressure at all in the right arm and in the left arm we sometimes would have to try for 15 or 20 minutes before we could get it. The pulse pressure increased definitely. On the first day after operation the systolic pressure was coming through somewhere above 90 and the diastolic pressure was around 70. She went through the first night quite well. She complained of some pressure under the sternum and some difficulty in breathing and also pain in her chest. Twenty-four hours after the operation over 40 c.c. of thin bloody fluid were aspirated from the wound. The drain was removed after having been in place for 24 hours. It did not drain anything, but after the drain was removed a little fluid escaped along the drainage tract.

"The next day, at the end of 48 hours, we again tapped the wound by inserting a small catheter into it and evacuated about 50 c.c. of fluid. There was considerable pneumothorax over the left chest. It had a drumlike percussion note and absence of breath sounds in the axilla and anteriorly beneath the clavicle. An X-ray film showed pneumothorax with the heart displaced toward the right. Dr. Cushing and I inserted a needle into the left chest and removed about 150 c.c. of air. Repeated X-ray films did not show very much if any decrease in the pneumothorax. There was still a little cyanosis of the lips and some engorgement of the veins, but all in all the circulation was improved and the temperature which had been about 39.4°C. was now beginning to subside. On the evening of the second day she had some cereal, and the following day she had several poached eggs.

"Yesterday the patient stated that she definitely felt better. The skin is beginning to lose its chalky white appearance and shows some pink color. The lips both yesterday and today are distinctly pink and have lost all traces of cyanosis. This is also true of the finger tips. The jugular vein is now collapsed. The veins on the dorsum of the hand are now completely collapsed. She has begun to eat and she has also begun to excrete urine. A definite diuresis, however, has not taken place.

"Examination this morning showed the temperature to be 37.6°C., the pulse rate 84, and the blood pressure 104/78. There is no cyanosis and no engorgement of the veins. The patient is alert, feels well and the pain has practically subsided in the chest. She desires to turn on her side in bed. The wound shows puffiness. There is some slight bulging of the wound but we shall not tap the mediastinum because of the danger of introducing infection. There is still some pneumothorax, but this is subsiding and the lung sounds are beginning to come through over the apex. The heart sounds are clear. The heart is slightly displaced a little to the right. Yesterday and today she has been troubled with gas, and enemata are being given for this. During the last three days the extremities from the knees down and from the elbows down have been cold, moist and clammy, and hot water bags have been placed around her. This cold clammy skin has now completely disappeared. The patient is well on toward recovery, and the mother was told that she could return to her home in Washington."

The patient remained at the hospital about 2 months longer for purposes of recuperation and observation.

For the next few years the patient was a different individual. She was able to lead a practically normal existence without any of the symptoms that had bothered her previously. However, the venous pressure remained persistently around 200 mm. of saline. About the latter part of 1936, symptoms began to recur in the form of a little abdominal swelling and pain in the left shoulder as before. These symptoms, however, did not annoy her much. She continued to work, which she had done almost continuously since the operation, running two rooming houses, and in February, 1938, she remarried. On February 25, 1938, she looked well and there was no ascites nor edema. The blood pressure was 100/80, the pulse rate 76 and the venous pressure 190 mm. The heart measurements were the same as before. The heart sounds were distinct, the rhythm was regular, and there were no murmurs, although there was a protodiastolic third sound. The liver edge was two finger-breadths below the costal margin in the right midsternal line on deep inspiration. Fluoroscopic examination of the chest showed excellent pulsation of the left cardiac border but not much pulsation of the right border, which was still prominent. An electrocardiogram at this time showed moderately low voltage and an inverted T wave in leads 3 and 4. In May, 1938, the patient complained of a sensation as of a mass crowding her upper abdomen. The liver was now found to be considerably enlarged, being down 3 finger-breadths in the right midclavicular line and 4 in the midsternal line. It was deemed advisable for her now to have a second operation for the purpose of attempting to relieve obstruction to the inflow of blood in the heart. Consequently the patient was sent back to Dr. Beck, whose report dated June 25, 1938, was as follows:

"I operated on ———— about ten days ago. The operative approach was on the right side of the sternum. This approach was selected because the patient showed signs of right-sided obstruction and also because the movement of the left ventricle was pretty good. Under the fluoroscope the right ventricle appeared to be lobular and markedly distended. The meaning of this was difficult to interpret. At operation we found some scar over the auricles and ventricles. This was dissected away. The scar did not seem to be producing very much in the way of compression. The right ventricle and auricle had a most unusual appearance. We dissected right down to a tense dark structure which looked as though it were ready to break open at any time. This structure was right ventricle. Its color was hemorrhagic, almost as if there was hemorrhage into the wall of the ventricle. The pulsation was very feeble. The scar invaded the ventricular wall and I am forced to the conclusion that we are dealing with right ventricle weakness and dilatation. I wanted to find something obstructing the conus arteriosus and the pulmonary artery to account for the dilated condition of the right ventricle but no such obstruction was found. At operation the left ventricle appeared to take a good free pulsation.

"This was perhaps the most difficult operation I have ever done. The dissection was dangerous throughout. We operated about four and a half hours doing it. The heart stood up well during the operation but the extremely tense right auricle and right ventricle were a constant threat during the operation. After the operation was over I was afraid we might lose her but she is coming along, showing slight improvement. Her systolic pressure runs around 100. The urinary output has stepped up with ammonium chloride."

The patient was discharged on August 10, 1938, and was re-examined at the Georgetown University Hospital on August 24. Fluoroscopic examination showed good pulsation of the left ventricle, but only slight pulsation of the right. However, there was less prominence of the right border of the heart than at previous examinations. The heart shifted well to the right when the body was tilted in that direction, but did not shift to the left. The right pleura was thickened at the base. The heart rate was 96, with regular rhythm but a protodiastolic gallop. The blood pressure was 94/70 and the venous pressure was 190 mm. The liver was enlarged, measuring 9 cm. in the right midclavicular line, 11.5 cm. in the midline and 2.5 cm. in the left midclavicular line. There was no demonstrable ascites or edema. The electrocardiogram was essentially the same as on the previous examination, except that the T-wave in lead 2 was now diphasic. The patient, however, appeared to be in much better condition generally than before her second operation.

Case 2. The patient, Mrs. A. P., a 45-year-old, white housewife, was admitted to the Gallinger Municipal Hospital on March 15, 1936. On a certain day in the preceding September, while washing clothes, she had "got suddenly weak all over." Her vision became dim, vertigo appeared and she lost consciousness for a few minutes. Upon recovery she had a severe chill and backache and felt feverish. During the night she was nauseated and vomited much greenish fluid. A physician treated her for grippe, and after a routine urinalysis stated that the kidneys were not good. Two weeks later she noticed her abdomen beginning to swell and an associated loss of desire to void. Anuria lasted 2 or 3 days and she then began to pass some urine. A chiropractor used a vibratory machine over her body and she thought this treatment caused some increase in the flow of urine. The swelling of the abdomen persisted, however, and a physician later gave her injections of salyrgan twice a week, which resulted in some relief. However, later the tendency to edema became more generalized so that even the face was swollen in the morning. This facial edema, however, she had noticed since she was 20 years of age. The only previous illnesses had been measles, pertussis and chickenpox in childhood.

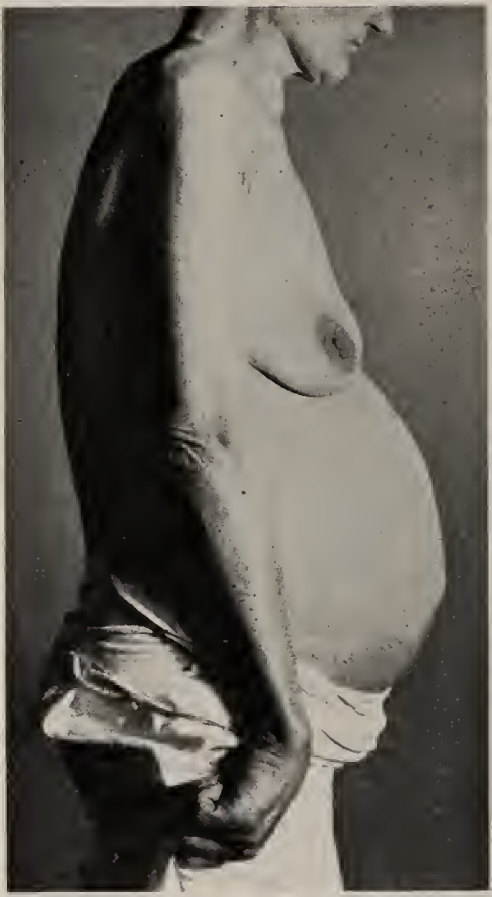

FIG. 1. Case 2. Before operation.

Before entering the hospital, the patient had apparently lost 20 pounds in spite of the ascites and edema. She was having some difficulty sleeping, had frequent attacks of dyspepsia, had developed hemorrhoids, complained of a hacking cough and was quite dyspneic on exertion. Attacks of palpitation of the heart had been relieved by abdominal paracentesis and the use of digitalis. Menstruation had ceased in September. The patient's 4 children were living and well.

Examination revealed a poorly nourished woman, not seriously ill and not dyspneic. There was a nodule approximately 2 cm. in diameter in the region of the isthmus of the thyroid gland, evidently an adenoma. There was a slight serous discharge from the right ear, the drum of which appeared tense and covered with an exudate. Several of the teeth were carious and several were missing. There was evidence of fluid in the right hemithorax, moderate in amount, and subcrepitant râles were heard at the bases of both lungs posteriorly. The apex beat was palpable in the 4th intercostal space, 6 cm. from the midsternal line. (The clavicle measured 13 cm.) The rhythm was regular and the rate was 114 per minute. There were no murmurs, but gallop rhythm was occasionally noted. The blood pressure was 92/70 The veins of the neck were moderately distended. The venous pressure was 255 mm. of saline. The abdomen was markedly distended, with evidence of free fluid (Fig. 1). The liver edge was noted to be 6.5 cm. below the right costal margin in the midclavicular line. Its surface was smooth and its edge apparently sharp. The spleen was not palpable. The pelvis was essentially negative. There was slight edema of the feet. The hemogram showed slight anemia, the urine was normal except for an abundance of calcium oxalate crystals, and Wassermann and Kahn tests of the blood were negative. A bromsulphthalein test of liver function showed 50 per cent in the first specimen and 5 per cent in the second. A concentration test of renal function showed the kidneys able to concentrate to a specific gravity of 1.029. Roentgenographic study of the chest revealed fluid at both bases but more marked on the right, absence of the enlargement of the heart and only slight movability of the heart in the thoracic cage. Electrocardiographic studies showed low voltage and depressed ST phase in leads 2 and 3; also, there was no shift in the electrical axis with change of position of the body (Fig. 2).

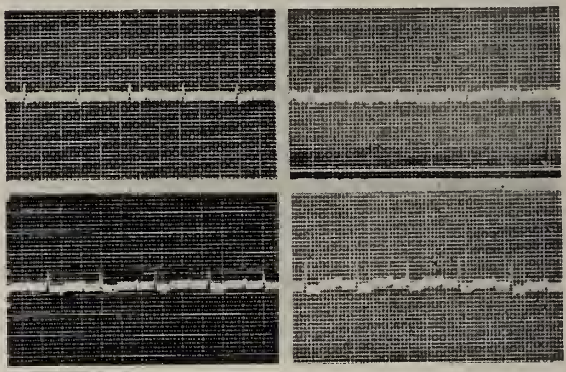

FIG. 2. Case 2. Leads 1 and 2; left, with patient on left side; right, with patient on right side. Low voltage and absence of shift of electric axis (lead 3 also did not change).

While at Gallinger Hospital, where she remained for approximately 5 weeks, paracentesis of the abdomen was performed on two occasions, 4 gallons of slightly turbid, greenish fluid being removed on one occasion, and $2\frac{1}{2}$ gallons on the other. To produce diuresis, ammonium chloride was given in adequate dosage and salyrgan injected at frequent intervals, while the fluid and salt intake was restricted. Response was fair. Digitalization was induced but did not cause any appreciable change in the venous pressure, which was determined frequently and found to range between 255 and 305 mm. of saline by the direct method of Griffith. The temperature remained within normal range and the pulse rate varied from 90 to 120. The patient was discharged with a diagnosis of constrictive pericarditis with Pick's syndrome.

On June 10, 1936, the patient entered Georgetown University Hospital. In the interim, at home, she had complained of abdominal distention, palpitation and marked weakness, with dyspnea on exertion. The results of examination were essentially the same as when she entered Gallinger Hospital, except that the veins were definitely more distended and the jugulars filled from below when emptied. There was also a pleural friction rub in both axillae. There was moderate edema of the lower extremities. Laboratory studies showed results similar to those at Gallinger Municipal Hospital. Hyperthyroidism was ruled out. A phenolsulphonephthalein test of renal function showed 54 per cent return of the dye at end of the first hour and 12 per cent the second hour, making a total of 66 per cent. During hospitalization, which lasted until July 15, the venous pressure ranged between 290 to 240 mm. of saline.

The same treatment was instituted that had been carried out at Gallinger Hospital, namely, fluid restriction to 800 c.c. daily, 8 grams of ammonium nitrate daily, 2 c.c. of salyrgan every 3 or 4 days intravenously and maintenance of digitalization. The pulse rate was persistently rapid, ranging from 90 to 120. The temperature remained normal. The diuresis, which at first was excellent, slowly decreased. When the patient left the hospital she weighed 102 pounds. On admission her weight had been 125 pounds. At the time of discharge, the abdomen was quite soft, the liver was easily felt and its margin reached 8.5 cm. below the costal margin in the right midclavicular line and 5.5 cm. below the tip of the xyphoid. There was evidence of some fluid in both hemithoraces, but more on the right. Pretibial edema was graded 1. The heart rate was 105 and the arterial blood pressure was 96/80. The venous pressure was 280 mm. of saline. The day before discharge, a paracentesis of the abdomen had led to the removal of 6 quarts of light, yellowish, clear fluid.

The patient was sent to Dr. Claude S. Beck at the Lakeside Hospital, Cleveland, Ohio, who confirmed the diagnosis and operated upon the patient in a similar manner as in Case 1, on July 21. The pericardium was found to be fibrous and about 1 mm. thick. By careful dissection Dr. Beck was able to remove a large piece of the pericardium over the anterior and left lateral surface of the heart. During the operation a brief period of ventricular fibrillation occurred and during this episode electrocardiographic tracings were made throughout. The heart pulsated apparently much more forcibly than it did at the beginning of the operation. Improvement postoperatively, however, was slow, and it was 6 weeks before the patient was able to return home. Her weight on discharge was 94 pounds. Venous pressure was in the neighborhood of 200 mm.

Since the operation the patient has been observed at frequent intervals. Her strength slowly improved and she has been able to be up and around with comfort most of the time, although she has not been permitted to do any but the lightest work. The heart rate has always been rapid, in the neighborhood of 110 and 120 per minute. Most of the time the abdomen has been relatively free of fluid, but occasionally this has reappeared and salyrgan has been administered with great relief. The venous pressure has fluctuated between 230 and 260 mm. The blood pressure has been in the vicinity of 115/70. The last check-up, on October 5, 1938, showed her to look very thin. Her abdomen had been enlarging, however, during the previous week and her legs had been somewhat swollen. She weighed 109 pounds in her clothes. There was 2 plus edema of the legs and a questionable ascites. The liver margin was 3 cm. below the costal margin in the right midclavicular line and 6 cm. below the xyphoid process. The heart rate was 120 with regular rhythm. The blood pressure was 136/75 and the venous pressure 210 mm. M. L. was 7 cm. and there was gallop rhythm. The patient had been kept on a maintenance dose of digitalis, and the fluid intake limited to 1000 c.c. daily. Because of recurrence of edema the patient was supplied with salyrgan suppositories, to be taken at intervals, as needed. However, during the night of November 6, while this paper was in press, the patient died, after a week of coughing. Necropsy revealed adhesions between the pericardium and lungs, great thickening of the adherent pericardium up to 3 mm., especially in the upper half all around, dense pleural adhesions throughout the chest, pulmonary congestion, enlargement of the liver and spleen, and ascites (about 1000 c.c.). There was no dependent edema.

Case 3. The patient, Mr. H. T., a Jewish man aged 37 years, entered the Georgetown University Hospital on July 9, 1936, complaining of palpitation, weakness, dyspnea and swelling of the ankles. At the age of 16 he had become "run down" and was hospitalized at the Johns Hopkins Hospital for a period of 4 months for a condition, the nature of which was unknown to the patient. A few years later he developed enlargement of the cervical lymph nodes and again went to Johns Hopkins Hospital, where the nodes were removed from one side of the neck. A year later they were removed from the other side of the neck, and at this time he was told he had tuberculous pericarditis with effusion. Except for an abscess in the left thigh, which had to be incised, he did fairly well until about January, 1935, when he began to have intermittent palpitation of the heart, especially when he was lying in bed, or after he had eaten a heavy meal. In March of the same year he began to feel weak and attended a hospital outpatient clinic, when he was digitalized. A little later he was hospitalized at the same institution and while there his abdomen began to swell moderately. The heart was found to be beating irregularly and there was evidence of fluid in the right pleural cavity. Fluid removed showed tubercle bacilli. Cough and expectoration developed at this time and he was sent to Gallinger Municipal Hospital for observation. At this institution no evidence of active tuberculosis could be found. From October 1, 1935, to February 7, 1936, he was hospitalized in Colorado and improved greatly, regaining most of his strength. On his return to Washington from this institution, he stopped to see Dr. Beck in Cleveland, having been advised to do so by his Washington physician, Dr. Benjamin Golden. Dr. Beck told him he had a scar around his heart which should be removed. However, he returned home without having this done. In May, 1936, he again began to have palpitation of the heart and muscular weakness, with swelling of the ankles. Shortness of breath on exertion became troublesome.

On admission to the Georgetown University Hospital, the patient was found to be well developed and fairly well nourished and not acutely ill. The heart appeared to be slightly enlarged, with its apex beat in the 5th intercostal space, 10.5 cm. from the midsternal line. Auricular fibrillation was present, but there were no murmurs. The lungs were clear. The abdomen was only slightly distended, and there was no evidence of free fluid. The liver was found to be enlarged, extending down 9 cm. in the right clavicular line. There was moderate edema of the ankles and the legs below the knees. The blood pressure was 125/80, the heart rate 85 with practically no pulse deficit, and the venous pressure 295 mm. of saline. With bed rest, restriction of fluid to 1500 c.c. daily and digitalization, the dependent edema disappeared, and the patient lost 20 pounds of edema fluid in 1 week. The venous pressure dropped to 218 mm. X-ray examination of the chest showed the presence of a small amount of fluid in the right hemithorax, bilateral apical opacities, and moderate enlargement of the heart, the total transverse diameter being 17.5 cm., with a transverse diameter of the chest of 31 cm. It was thought that there was some calcification of the pericardium. The heart did not appear to shift very much with change of position. The electrocardiogram showed auricular fibrillation with rate of 100 and no appreciable shift in the electrical axis with change of position of the body. On July 16, the patient was sent to Cleveland for operation by Dr. Beck.

Dr. Beck found the operation to be very difficult since the whole surface of the heart seemed to be encrusted with a thick deposit of calcium. A fair amount of this was removed, however, from the anterior surface of the heart but Dr. Beck did not expect much in the way of results. Convalescence was slow and rather stormy, but during the next 2 months improvement became quite noticeable and the cardiac output had increased about 25 per cent, with almost complete disappearance of edema.

This patient has continued to do very well since the operation, although his venous pressure has been persistently around 200 mm. The last check-up was made on August 26, 1938. The patient had been working steadily as a salesman. He did not complain of dyspnea, palpitation or edema. The abdomen had not become increased in size and there was no nocturia. The heart was about the same as originally, although that organ may have become somewhat smaller. Auricular fibrillation persisted with rate of 88 per minute and without pulse deficit. The blood pressure was 110/80. The liver edge was palpable 7 cm. below the costal margin on the right. The venous pressure was 150 mm. in the right arm and 170 mm. in the left. Fluoroscopic examination showed the pulsations on the left border of the heart to be very good, but those on the right side to be quite weak. On tilting the patient there was practically no shifting of the heart to the left or to the right. The electrocardiogram showed auricular fibrillation and right axis deviation.

COMMENT

If the disease is kept in mind the diagnosis usually is not difficult. The pathognomonic triad of Beck can easily be elicited. The ascites is demonstrable on physical examination of the abdomen; the small, quiet heart is detected by physical examination and confirmed by fluoroscopic examination; and the high venous pressure can usually be ascertained by observing the height above the level of the right auricle at which the antecubital veins empty when the patient is supine. The venous pressure can be accurately determined by a very simple method previously discussed in this journal. The normal range is from 40 to 120 mm. of water or physiological saline solution.

It will be noted that none of these three patients was young and that the clinical histories were quite different. The use of digitalis had little effect, although it undoubtedly was beneficial in Case 2. Pleural effusion due to actual pleuritis was present at one time or another in each case.

Although the surgeon was able to accomplish but a small part of what he desired in any case, all of these patients have been greatly benefited and returned to useful and comfortable existences from a state of chronic invalidism and dependence. The surgeon, by freeing the ventricles, mainly the left, of their constricting pericardium, allowed them to fill and empty better. Had it been possible to remove most of the scarred casing of the heart, and especially that part around the mouths of the venae cavae, the patients could have been restored to practically complete normalcy. Apparently the scar does not reform to any great extent, as do adhesions within the abdomen.

The surgery involved is of a special type, requiring experience of a special kind, good judgment, and great patience. The heart is constantly in motion, is an irritable organ and responds to stimuli, and must be handled delicately. The line of cleavage so desirable is often not to be found, and it is extremely easy to injure a coronary artery or to make a fatal rent in an auricle. Frequent rest periods for the heart are essential. Close coöperation with a qualified internist is invaluable. Proper pre- and postoperative care is very important.

(*Continued on page 370*)

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THE PRESIDENT'S MESSAGE

CHANGE

"We looked for peace, but no good came;
for a time of health, and behold trouble!"

Overt changes affecting the mores of a people require long and patient effort, more especially when they concern birth, sickness, death and burial. The favorite methods of our time are legislation and preaching. These methods ultimately fail because they aim at great results in a short time.

Constant, gradual, smooth and easy readjustment is the course of things which is conducive to healthful community life. It is by no means to be inferred that everyone who sets himself at war with the traditional mores is a hero of social correction and amelioration. The trained reason and conscience never have heavier tasks laid upon them than when questions of conformity to or dissent from the mores are raised. Dissent seems to imply a claim of superiority. It evokes hatred and persecution.

The alleged intransigency of the doctors of medicine, contrary to some opinion, is not due to fear of personal material loss, but to jealousy for standards of the profession of medicine. Standards of admittance to study medicine, of medical education, and, to a large extent, even of licensure to practice the healing art, be it noted, have been created, maintained, and elevated by the profession itself, and very little by legislative enactment or pressure of public opinion. The societal value of these standards of practice has the tacit acknowledgment by the public in the willing assignment of social status and material rewards.

Changes in important social relations should be made gradually after temperate consideration. If the social trend toward hasty change for apparent immediate convenience or benefit threatens to lower hardly won standards and impair professional morale, such change in the long run will harm the public and the community far more than it will the individual practitioner of medicine. But the doctor, having special knowledge in these matters, does not desire to disassociate himself from the privileges and duties of a citizen. It is therefore his duty to direct, modify, and temper changes so as to mitigate as much as possible injurious effects.

Promote peace and a time of health will appear!

WILLIAM J. MALLORY, M.D.

WHAT THE PUBLIC SHOULD KNOW

Not long ago we overheard a discussion about medical societies. All of those present were laymen who had read about controversial issues relating to medical care which have in recent months been featured by newspapers. One of the more critical said, "I cannot understand the attitude of the local Medical Society. I have a lot of respect for and confidence in physicians I know personally, but the position taken by the Society is one which I think is shortsighted, to say the least."

Unfortunately, this has seemed to be the attitude of many people. Reasons for it are not difficult to understand. One of the most obvious explanations is the vocal criticism of those who would bring about radical changes in medical practice, and who are impatient with the opposition of physicians honestly questioning the advisability of the proposals made. For the most part, these critics are not physicians, but they are able publicists. Day after day they expound their views in the press.

Admitting that changes are necessary, and that it is an obligation of the organized medical profession to give leadership to health movements which would assure the people of more adequate medical care at costs that they can afford, a warning needs to be sounded. Danger lurks in tactics which intentionally or otherwise undermine public confidence. That they may well threaten the quality of medical care is apparent.

We believe it is the responsibility of the profession to see to it that the public knows the whole truth about what is involved in the proper care of patients, and further, that the public should be apprised there is no simple solution to the problem of providing a high quality of medical care to all the people. A point universally ignored is that somehow medical service must be paid for, regardless of methods evolved.

Medical service plans are not thrown together, hit or miss, but require careful experimentation under professional control and supervision. And the reason for this should be explained so that it will not be misunderstood.

In addition, it should be made clear that the medical profession is progressive, never reactionary. Every great health movement in this country has been inspired or inaugurated by some medical society. Numerous health projects are at the present moment being carried on by medical societies or in coöperation with them.

Finally, the people should know that medical societies are composed of their personal physicians, whose opinions decide their policies. There are no "hierarchies," except as created by those whose way of thinking is not in agreement with that of the medical profession.

DOCTORS AND THEIR SONS

On several occasions we have heard physicians of our acquaintance say, "My son wants to study medicine but I am discouraging him. With so much agitation for change, there are going to be developments in medicine which will rob him of the opportunities which I have had. I want him to choose a field in which there will be a more promising future." When asked to be more specific, the physician may say something about State Medicine or perhaps refer to keen competition due to the overcrowding of the profession.

We suspect that frequently these practitioners do not mean what they say, for this attitude is common to those in many other vocations. Businessmen complain that their occupation is unnecessarily difficult, and wish that they were engaged in some other line of endeavor. Likewise, ministers, lawyers, actors, when they encounter drudgery, disappointments, and uncertainties, are certain their lot could be happier. It is therefore not surprising that fathers hope their sons will escape the trials which have beset them in their work. No, the doctor is not alone in looking upon his vocation as being unnecessarily difficult and one which at times he would rather his son would not follow.

However, before the physician proceeds to discourage his son from following in his footsteps, he should do some serious thinking. Has he come to the conclusion that it is undesirable after a thorough analysis of the situation? Has he become a defeatist willing to accept without a struggle changes in his profession which he honestly believes are detrimental to the people? These and other important considerations he might well turn over in his mind until he is certain that the advice he gives his son is sound.

We are of the opinion that if the doctor makes an honest analysis he will come to a happier conclusion. There is no need to be unduly concerned about changes in medical practice so long as physicians meet the issues which arise, honestly and with courage. The voice of a great profession will not be disregarded by the people where health is concerned. Of course, physicians must always place the welfare of patients before every other consideration. If after due deliberation it is decided that changes in methods of medical practice are desirable, the profession should be the first to suggest their adoption. Surely pessimism about the future is unwarranted. In fact, we feel that such an

(*Continued on page 370*)

REPORTS OF COMMITTEES*

COMMITTEE ON PUBLIC INFORMATION

As communications to members of the Society in the past few months would indicate, your Committee on Public Information has been very active in recent months.

Submitted herewith is a brief statement of its activities:

1. *Reëstablishment of the Speakers' Bureau:* A canvass of the Society for speakers brought forth a most enthusiastic response, 129 having signified their willingness to participate. Detail work in connection with the operation of the Bureau has nearly been completed and shortly a list of titles will be available to lay organizations throughout the city who may wish to obtain speakers.

Members of the Society who have agreed to participate should read the Rules Governing the Speakers' Bureau, because they have been adopted for the protection of the medical profession as well as the public.

2. *Radio Programs:* Few members of our Society realize the labors entailed in conducting radio programs. It is suggested to those who are unfamiliar with this phase of the Society's program and with what is required to prepare and broadcast them that they read an article which appears in the October issue of the MEDICAL ANNALS entitled "The Doctor Is On the Air." If it were not for the willingness of many physicians to give of their time generously and without credit, weekly broadcasts would obviously be an impossibility.

3. *Public Speaking Clinics:* Although only 19 have enrolled and paid their fees for the Public Speaking Clinics, your Committee feels that this effort is worthwhile. There is still ample time to enroll. The first meeting was held October 3. W. Hayes Yeager, Depew Professor and Executive Officer of the Department of Public Speaking of George Washington University, is personally in charge of the Clinics.

4. *Public Health Exhibit:* Consideration has been given by the Committee to sponsoring a health exhibit similar to the Hall of Health which attracted some 150,000 persons at Milwaukee during the annual meeting of the State Medical Society of Wisconsin last year. This is a vast undertaking and your Committee has no recommendations to make at this time. However, it is giving further study to such a project.

5. *Press Releases:* Recommendations relating to publicity were adopted by your Committee because of the difficulties which have arisen in past relations between the physician and the press. Your Committee sincerely hopes that all members of the Society will adhere to them.

The Committee's relations with the press in recent months have been most cordial. The material released through the Society's Office has been handled in a most commendable manner.

Because there is a genuine need for a health educational program, the Committee on Public Information will extend its activities from time to time, with the approval of the Executive Committee and the Society.

Your Committee solicits your suggestions because of its desire to make the efforts of the Committee of greatest value to the public and the medical profession.

Respectfully submitted,
HERBERT P. RAMSEY, M.D., *Chairman*
R. LYMAN SEXTON, M.D., *Vice Chairman*
P. A. MCLENDON, M.D.
HERMAN S. HOFFMAN, M.D.
VICTOR R. ALFARO, M.D.
THEODORE WIPRUD, *Secretary.*

COMMITTEE ON PUBLIC HEALTH

The personnel of the Committee on Public Health includes members of the Subcommittees on Communicable Diseases, Deafness Prevention, Maternal Welfare, Mental Health, Sanitation, Tuberculosis, Venereal Diseases, and Conservation of Vision. Activities of these subcommittees embrace a considerable field in preventive medicine and through their efforts worthwhile and needed health projects are made possible.

The Committee on Public Health has made several important contributions to the health of the community in the past. Among its projects have been campaigns to reduce the incidence of diphtheria, tuberculosis, and venereal diseases. Various aspects of deafness, especially among children, and mental diseases have also been dealt with by the Committee.

Your Committee is going forward with more ambitious plans this year to meet public health needs in the District of Columbia. Some of these are reflected in the reports made by the subcommittees at a meeting on July 26, 1938.

Presented herewith are highlights of these reports of recent activities:

Subcommittee on Communicable Diseases: The Chairman reported that the Subcommittee was preparing a revision of rules for the control of contagious diseases in the District with a view to making recommendations for their adoption.

Subcommittee on Deafness Prevention: The Subcommittee has long interested itself in children who are handicapped because of defective hearing. This year it is coöperating with voluntary organizations interested in handicapped children and acting with them on an advisory committee to the Board of Education. It is contemplated that an adequate program will be the result of the deliberations of this group.

Subcommittee on Maternal Welfare: Approval of the showing of the motion picture, "The Birth of a Baby," was given by the Subcommittee and later approved by the Society, with certain restrictions relating to publicity and admission of children. It has also investigated the possibility of standardizing qualifications of physicians doing obstetrical work in hospitals.

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* Presented at the Business Meeting of The Medical Society of the District of Columbia, October 5, 1938.

Subcommittee on Mental Health: The Subcommittee has concerned itself with many legislative problems relative to the care of the mentally ill.

Subcommittee on Sanitation: An enlightening report on sanitary conditions in the District has been submitted by the Subcommittee to the Committee on Public Health.

Subcommittee on Tuberculosis: Provisions for care of tuberculous patients in the District have received the attention of the Subcommittee. It reported its findings and advised that members of the Subcommittee had, at the request of the Health Officer, agreed to make an investigation of present facilities.

Subcommittee on Venereal Diseases: Recommendations relating to a Venereal Disease Campaign, proposed by the Health Committee of the Junior Chamber of Commerce, were submitted to the Committee on Public Health, who withheld action for the present.

Subcommittee on Conservation of Vision: The Subcommittee has not yet submitted a report of its activities and plans.

In addition to the above activities, the Committee on Public Health has considered proposals made to it by Mr. Ross Garrett, Administrator of the Health Security Administration, relative to the certification of good health and freedom from venereal diseases of food-handlers, and also the request of the National Youth Administration of the District of Columbia that physical examinations be made of 174 youths now employed on local projects. The following action was taken on both of these proposals: The Committee instructed that Mr. Garrett be informed that present requirements for certification are inadequate and that it wished to make them a part of a larger study of the subject. Consideration will be given the communication from the National Youth Administration by a special subcommittee to be appointed by the Chairman.

We hope from time to time to keep you informed on the progress of the Committee in the field of Public Health.

Respectfully submitted,
Charles R. L. Halley, M.D., *Chairman.*

COMMITTEE ON BLOOD TRANSFUSION SERVICE

Your Committee on Blood Transfusion Service wishes to report the progress which it has made since its appointment by the President on February 9, 1938. It is perhaps advisable to remind our members that the Committee was created for the purpose of coöperating with the American Red Cross in establishing a Blood Donor Service for the indigent.

On June 3, 1938, the Committee submitted its recommendations to the Executive Committee. It cited certain practical objections to the plan proposed by Dr. William DeKleine, Medical Adviser of the American Red Cross, that donors obtained by appeals to civic organizations be examined, typed and given Wassermann tests and listed for transfusions at the American Red Cross Headquarters. An unusually large staff, it was pointed out, would be necessary for the operation of a plan of this type. Furthermore, it would be very costly.

The Committee was of the opinion that the simplest method of carrying out the suggested project was to establish a "blood bank," using placental blood. Dr. DeKleine, however, was not particularly favorable to this idea, stating that he believed it impractical. The Committee felt that the matter should be submitted to the Executive Committee. This was done and the Executive Committee, after deliberation, supported the views of Dr. DeKleine and endorsed the original plan.

In accordance with the action of the Executive Committee your Committee has given its support to the plan proposed by the American Red Cross. Hospitals were requested to make available their facilities for typing and Wassermann tests. A number responded favorably. However, it was later thought advisable to discuss the plan with pathologists. Dr. Oscar B. Hunter kindly consented to obtain, if possible, the coöperation of the pathologists, which he has done. Several have indicated their willingness to assist. The Chairman of the Committee has agreed to obtain physicians to examine donors. It is, of course, understood that physicians participating in this plan are donating their services.

Although no definite date has been set for the inauguration of the Blood Donor Service, it will undoubtedly get under way sometime in November. Your Committee believes that it is a worthwhile project and one which will reflect credit, not only on the American Red Cross, but on the Medical Society as well.

Respectfully submitted,
Henry B. Gwynn, Jr., M.D., *Chairman*
Daniel L. Borden, M.D.
Russel J. Jansen, M.D.
Theodore Wiprud, *Secretary.*

COMMITTEE ON MEDICAL ECONOMICS

At its business session on February 2, 1938, the Medical Society voted favorably upon the recommendations of its Subcommittee on Prepaid Insurance Medicine, which were that the report of the Committee be referred to the Public Relations Committee with the request that the President be authorized to appoint four additional members to the Committee "and that the enlarged committee be charged with the additional duties of formulating a comprehensive plan for providing good medical care for all the citizens of Washington, maintaining such contacts with interested lay groups as it may deem advisable in its study, and reporting its progress at frequent intervals to the Society and its final recommendations as soon as may be practicable."

A progress report was submitted to the Society on May 11, 1938, by Dr. John A. Reed, Chairman of a subcommittee of the Public Relations Committee studying this subject. Dr. Reed reported that no definite plan had been decided upon because of the difficulties encountered in obtaining actuarial data and other important information. Upon the appointment of new committees in July of this year, the task of developing a program was assigned by the Executive Committee to the Committee on Medical Economics, which has continued the work of the previous committee. It now presents for the consideration of the Society a report of its activities since July 1, 1938, and its recommendations.

Study of Need and Supply of Medical Care: Upon the request of the Bureau of Medical Economics of the American Medical Association, the Committee has been conducting a study of the need and supply of medical care in the District of Columbia. This investigation should be completed by the latter part of October. Coöperation has been sought and obtained from the medical and dental professions, hospitals, nurses, the Health Department, private and governmental welfare and relief agencies, schools and colleges, industrial, fraternal and mutual benefit associations, and pharmacists. The results of this study should prove most enlightening.

In connection with this investigation, a canvass has been made of the Society to determine the views of the membership relative to the local medical situation. Opinions which have been expressed to date, we believe, are significant.

In response to the inquiry: "What is your opinion of the present method of providing medical care for the indigent in their homes? In what manner can it be improved?" the following replies have been received:

177 favored a change in the present method of home care because it was inadequate. There was no general agreement as to the manner in which this should be done. Among the suggestions made were panels and rotating lists of physicians, free choice of physicians by the indigent for care in the home, etc.
53 opposed any change and felt that the present system was adequate.
100 had no comment to make.

There was more unanimity of opinion as to replies to the question: "In your opinion, is there a need for better methods than now exist for providing medical care for the low-income group?" Of the 330 reporting 236 thought there was a need for "better methods," while 94 expressed the view that present methods were satisfactory and that there was no need for change. The following analysis reveals the opinions of those (236) who stated their belief that changes were necessary or who favored the adoption of a plan:

56 favored a plan similar to Group Hospitalization, Inc., for providing medical care.
51 favored a plan embodying the indemnity-insurance principle.
13 favored plans similar to those in operation throughout the country, as for example, the Fulton County (Georgia) Plan, the Brattleboro (Vermont) Plan and the proposed Health Budgeting Association Plan.
67 favored miscellaneous plans which include the establishment of clinics, diagnostic centers, community medical centers, standardizing and scaling of fees for the low-income group, etc.
49 favored no definite plan but thought something should be done.

Although the response would ordinarily be considered satisfactory (330 out of an Active Membership of 855) it is to be regretted that greater numbers of our members have not replied to the important questions embodied in this inquiry. Every effort has been made to obtain returns. At least three reminders have been sent to members by mail. In addition offices of all Active Members have been called by telephone.

Investigation Made of the "Ontario Plan": Although the Committee has considerable material about various types of medical service plans in its files, it was in its opinion desirable to observe one in actual operation. Authorization was sought of the Executive Committee to have the Chairman of the Committee and the Executive Secretary make a first-hand study of the so-called "Ontario Plan" because of its similarity to one which the Committee has had under consideration. The Plan, known as Associated Medical Services, Inc., (Headquarters: Toronto) has been in operation for fifteen months.

Despite the brief existence of the Associated Medical Services the Chairman and the Executive Secretary gained much valuable information by observing the difficulties which have been encountered and the degree to which the plan has been successful.

The Society is indebted to Dr. J. A. Hannah, Chief Medical Officer of the Associated Medical Services, Dr. A. D. Kelly, Secretary of the Ontario Medical Association, and other officials of both groups, who gave generously of their time so that our Society might have the benefit of all the information which it desired.

A complete report of the study made by the Chairman and the Executive Secretary has been submitted to the

Committee on Medical Economics and to the Executive Committee.

Proposed Medical Service Program: Your Commttee has encountered the same difficulties which have confronted similar committees of the Society in obtaining reliable statistical and actuarial data. There is no plan of the type favored by the Committee which has sufficiently demonstrated its financial soundness.

You are, of course, familiar with the fact that many experiments in medical service plans are going on in this country today. According to a recent statement by Dr. R. G. Leland, Director of the Bureau of Medical Economics of the American Medical Association, there are at present 152 State and County Medical Society medical service plans in operation and 80 are proposed. This number will undoubtedly greatly increase because of the sentiment expressed at the National Health Conference held in Washington in July and the recent action of the House of Delegates of the American Medical Association at Chicago, approving cash indemnity insurance plans and encouraging medical societies to meet their local health requirements.

Valuable assistance has been given the Committee in the matter of actuarial data by one of the larger insurance companies. Copies of plans which are now being considered in various communities have also been made available to the Committee. These have been most helpful.

At the present time the Committee is working on the details of its program. However, it is the unanimous opinion of the Committee that approval of the basic features of a medical service plan by the Society is essential before proceeding further. Nothing could be gained by a discussion of the details of a plan on the floor of the Society. If the fundamentals of a plan, which are set forth in this report, are approved, your Committee requests authorization, following the completion of its plan, to mail a copy of it to each member of the Society, with a ballot on which to record his vote in favor of or against its adoption. It is suggested that a two-week period be allowed in which to vote. A majority vote of Active Members for or against the plan (provided it is not less than 50% of the Active Membership) should, in the opinion of the Committee, decide whether it is to be adopted or rejected. If adopted, it is recommended that the Executive Committee submit for approval to the Society in general session methods by which it is proposed to proceed to establish the plan. It is also recommended that it be made clear to the public that the plan is in the nature of an experiment. Further, that changes in the manner of its operation, including rates to subscribers, may have to be made after the first year.

Fundamentals of the Plan: No program to provide medical care to the people of the District of Columbia to whom the costs of medical service are a burden would be adequate which did not include the indigent. To ignore the deficiencies in the present method of supplying medical care for this group would be to fail in our obligation to the public. A two-fold program is therefore proposed:

(a) A more adequate medical service program, particularly as it relates to domiciliary care, for the care of the indigent.

(b) A prepayment medical plan for the low-income groups.

Despite the large amount of free service given by physicians and the generous provisions which have been made for medical care of the indigent in the District of Columbia there are still inadequacies. Particularly is this true with reference to home care. Your Committee is of the opinion that domiciliary care for the indigent should, with necessary restrictions, be rendered by a physician of the patient's choice who would be compensated by the Government. This is in line with the recommendation made at the National Health Conference and the action taken by the House of Delegates of the American Medical Association at its recent session. Obviously the development of such a program will require the coöperation of both physicians and health officials. It is therefore recommended that a conference be held with the District Health Officer to consider this proposal with him, a report being made to the Society of the conclusions arrived at.

Your Committee believes that under a mutually satisfactory arrangement, whereby the indigent patient can call the physician of his choice, providing he has agreed to participate in the program, medical service will be more adequate. It is also of the opinion that if this service were available, hospitalization would in many instances be unnecessary.

Insofar as the so-called low-income group is concerned, your Committee feels that the following fundamentals are essential in a prepaid medical service plan for the District of Columbia:

1. That competent diagnostic and curative medical care be provided to all persons who wish to subscribe and who are entitled to the benefits of the plan.
2. That persons privileged to subscribe be limited to—
   (a) Single persons with annual incomes of $2,000 or less.
   (b) Married persons with combined annual income of $2,500 or less. (Additional income allowances are contemplated for married persons with dependents. The manner in which this shall be done remains to be determined.)
3. That subscribers be permitted a free choice of physicians, provided the physician chosen has agreed to participate in the plan.

4. That a non-profit association be organized through which benefits will be provided. Lay participation, with medical control, is contemplated.
5. That provisions be made for classification of physicians according to type of practice, proper handling of complaints, and medical supervision of all aspects of the plan.
6. That necessary restrictions be placed upon benefits under the plan so that competent service and financial solvency will be assured.
7. That subscribers be required to pay dues on a monthly or quarterly basis, the rates being sufficient to make the plan financially sound and attractive.
8. That a schedule of fees be established which meets the approval of the Society.
9. That the cooperation of Group Hospitalization, Inc., be sought.

It is recognized that a plan embodying these basic features does not fully meet all the problems involved in the medical care of the group which it proposes to serve. Nursing and dental services, and drugs are not included. However, hospital care is now adequately provided for by Group Hospitalization, Inc. In time it is hoped that experience will prove it possible to provide at very little additional cost other needed services. For the time being it is the opinion of your Committee that it is wise to limit benefits to medical care alone.

If the recommendations contained in this report meet with the approval of the Society your Committee will continue its work, and, if possible, submit a detailed medical service plan to members of the Society before November 15, 1938.

Respectfully submitted,
Arch L. Riddick, M.D., *Chairman*
Charles S. White, M.D., *Vice Chairman*
Arthur C. Christie, M.D.
Harry S. Bernton, M.D.
Thomas E. Mattingly, M.D.
E. Hiram Reede, M.D.
Russel J. Jansen, M.D.
Howard P. Parker, M.D.
Jesse T. Mann, M.D.
Theodore Wiprud, *Secretary.*

THE EXECUTIVE COMMITTEE

Because of the changes which have recently taken place in our organization and the many activities which have been carried on during the past summer, your Executive Committee welcomes the opportunity of presenting this report.

As you know, the Committee was reorganized on July 1. It now consists of 7 members, including the President, the President-elect, and the Delegate to the American Medical Association. On the basis of efficiency alone, if our experience to date is a criterion, the Society's action in amending the Constitution and By-laws to provide for a smaller Executive Committee, has been fully justified.

The Executive Secretary assumed his duties on June 1. Since that time he has been familiarizing himself with the local medical situation and making plans for the future. He has also submitted recommendations to the Committees of the Society, several of which have been adopted. Naturally his services will become of greater value as time goes on and an opportunity is given him to perfect details of organization.

Among the principal activities of your Executive Committee since July 1 have been the following:

Subcommittee Appointed to Revise the Constitution and By-laws: This Subcommittee of the Executive Committee has been very active. Although it has been aided by the Society's Legal Counsel, before submitting its final draft to the Executive Committee, which in turn will report to the Society at the stated meeting in November, it will solicit the advice of members of the Society who are interested.

As many members recognize, it is essential that the Constitution and By-laws be revised because of inconsistencies and to meet the needed changes in organization.

Investigation by the Department of Justice: As you all know, the Department of Justice has announced its intention to present to the Grand Jury information purporting to show that the activities of the Medical Society and the American Medical Association are in "restraint of trade." According to recent press reports the Department contemplates issuing a call for a special jury to sit October 16 and 17.

In the course of the summer investigators for the Federal Bureau of Investigation have examined correspondence and other material in the Society's Office.

Changes in Organization: Following the arrival of the Executive Secretary, certain changes in organization were necessary so as to centralize committee and all other activities about the Society's Office. This was done in the interest of efficiency and to assure continuity of the Society's program.

The Executive Secretary is now Secretary of all committees. Chairmen and committees have been requested to discuss their activities and plans for the future with him, and have been informed that he will record minutes of all Committee meetings.

Expansion of Health Educational Services: Your Executive Committee, upon the recommendation of the Committee on Public Information, has approved the reorganization of the Speakers' Bureau, the extension of the present radio program, and release to the press of authentic medical news. It has also approved the

General Recommendations Governing Members of The Medical Society of the District of Columbia Regarding Publicity, submitted to it by the Committee on Public Information.

The Committee believes that dissemination of health information is an important function of the Medical Society and that present facilities should be expanded.

National Health Conference: The Chairman of the Executive Committee and the Executive Secretary attended as observers all sessions of the National Health Conference held in Washington in July. Their report to the Committee leaves no doubt as to the significance of the Conference and its implications for the future.

Your Committee urges that all Society members read extracts of addresses made to the Conference which appear in the September issue of the MEDICAL ANNALS. They are most enlightening, revealing more clearly than official pronouncements the trend of thought along health lines in this country.

Establishment of a Public Information Bureau and Canvass of the Society to Determine Number of Physicians Who Would Subscribe to a Society-Owned Telephone Exchange Approved: Although the establishment of a Public Information Bureau has been approved, so much effort has been required of the personnel at the Society's Office in connection with the proposed medical service plan and other important matters that the inauguration of the Bureau has been held in abeyance. It should be made clear that the Bureau would operate at no additional cost to the Society, inquiries being handled by the present office personnel.

A canvass to determine the interest of the membership in a Society-owned telephone exchange has not been made for the reasons stated above. However, both of these matters will receive attention in the near future.

Chairman of the Executive Committee Attends Special Session of the House of Delegates of the American Medical Association, September 16–18: Because of the importance of the Special Session of the House of Delegates and the suggestion made by the American Medical Association officials that component state medical societies be adequately represented, your Executive Committee voted to have its Chairman attend. Also in attendance were Drs. Henry C. Macatee, Delegate to the American Medical Association, Wallace M. Yater, Editor of the MEDICAL ANNALS, and Mr. Theodore Wiprud, Executive Secretary. Further reference to this important meeting is not necessary because Dr. Macatee has made his report to you.

Resignation of Frederick A. Fenning, Esq., Counsel for the Society: Mr. Frederick A. Fenning, Counsel for The Medical Society of the District of Columbia, has recently resigned with the request that he be made Advisory Counsel for the Society without honorarium. This matter was considered by the Executive Committee and it recommends that Mr. Fenning be appointed Advisory Counsel and Charles S. Baker, Esq., who is well qualified for the position, be appointed Mr. Fenning's successor at an annual honorarium of two hundred dollars. Mr. Baker has already given the Executive Committee invaluable assistance. During Mr. Fenning's absence from the city he has frequently taken over the responsibility devolving upon the Society's Legal Counsel.

Resignation of Mrs. Dorothea Everett: It is with deep regret that we announce the resignation of Mrs. Everett, due to ill health, effective October 1, 1938. Mrs. Everett has been employed in the Society's Office for the past 14 years. She is known to every member of the Society as a loyal, courteous and efficient worker, and one who has conscientiously given the best service of which she was capable.

Your Committee feels that the Society should give recognition to Mrs. Everett's splendid qualities and faithfulness and recommends that a communication expressing the Society's appreciation be forwarded to her.

Committee on Arrangements for Annual Meeting: Authorization is usually given the President at the first Business Meeting to appoint a Committee on Arrangements for the Annual Meeting. Your Committee recommends that such authorization now be given.

Proposed Medical Service Plan: Your Executive Committee approved the report and recommendations submitted to it by the Committee on Medical Economics at its meeting on October 3. It believes that the essential features of the proposed medical service plan submitted to it by the Committee on Medical Economics, are sound and in accordance with the action taken by the House of Delegates of the American Medical Association. The Committee also approved the methods by which the Committee on Medical Economics proposes to determine the wishes of the Society.

We believe that the reports submitted at this meeting indicate the extensive activities in which the Society is now engaged. You can be assured that every effort will be made by the Executive Committee, with your approval, to carry forward the program which has now been so well begun.

Respectfully submitted,
F. X. MCGOVERN M.D., *Chairman*
THOMAS E. NEILL, M.D.
RAYMOND T. HOLDEN, M.D.
JOHN HUGH LYONS, M.D.
DON JOHNSON, M.D.
WILLIAM J. MALLORY, M.D.
HENRY C. MACATEE, M.D.
THEODORE WIPRUD, *Secretary.*

CALENDAR FOR COMING MEETINGS

Wednesday, November 16: Baltimore City Medical Society will be guests of the local Society at a buffet supper and will furnish the following program:

"Slow Epinephrin." Lantern slides. Edmund L. Keeney, M.D.

"Genital Abnormalities of Hermaphroditism and Adrenal Diseases." Motion pictures in colors. Hugh H. Young, M.D.

"Rectal Lymphogranuloma." Lantern slides. Monte Edwards, M.D.

Wednesday, November 23: No meeting.

Wednesday, November 30: Symposium on Therapeusis, with the following subjects to be discussed:

"Insulin Treatment of the Psychoses." Motion pictures. Alexander Simon, M.D.

"Metrazol Treatment of the Neuroses." Walter Freeman, M.D., and H. D. Shapiro, M.D.

"Observations on the Use of Chaulmoogra Oil in Arthritis." Camp Stanley, M.D., F.A.C.S.

Discussion will be opened by Elmer T. Ceder, M.D., of the U. S. Public Health Service, who is doing special work in arthritis at the U. S. Marine Hospital in Baltimore, Md. Charles R. L. Halley, M.D., and others will participate in the discussion.

Wednesday, December 7: Business Meeting.

Monday, December 12: *Section on Gastroenterology.* "Liver Function, Biochemical Consideration and Clinical Application." Henry Joseph Tumen, M.D., of Philadelphia. Discussion by Drs. Wallace M. Yater, E. C. Albritton, Albert Sullivan, and John R. Cavanagh.

Wednesday, December 14: Program furnished by the Georgetown Clinical Society and the George Washington University Medical Society will consist of a Symposium on Practical Considerations of Common Problems in Obstetrics and Gynecology:

"Office Routine for Discovery of Early Toxemias of Pregnancy and Borderline Cases." Lawrence Lee Cockerille, M.D.

"Management of the Third Stage of Labor." Allan E. King, M.D.

"Routine Treatment of Gonorrhea in Females, Non-Antiseptic Methods." Bernard Notes, M.D.

"Simple Technic for Repair of Relaxed Perineum at Delivery" with motion pictures. James R. Costello, M.D. Discussion will be opened by Drs. J. Bay Jacobs and Jerome F. Crowley. Buffet supper will follow the meeting.

RADIO BROADCASTS

The Medical Society of the District of Columbia

The Committee on Public Information has released the following program to be presented over Station WMAL, at 10:45 A.M., each Wednesday:

November 23: Too Much Thanksgiving.

November 30: Infectious Asthma.

December 7: To be sponsored by the Tuberculosis Association of the District of Columbia.

December 14: To be sponsored by the Tuberculosis Association of the District of Columbia.

MEMBERSHIP

The following were duly elected to membership at the stated meeting November 2, 1938:

Active Members

James Clement Cawood, 1418 Good Hope Road, S. E.
Louis Anthony Cornet, 1927 North Capitol Street
William Dyke, 1029 Vermont Avenue, N. W.
Cecile Leban Fusfeld, 1816 R Street, N. W.
Clayton Hawfield, 1616 16th Street, N. W.
Lois Dean Hubbard, Saint Elizabeths Hospital
Richard Stephen Hulburt, 3000 Dent Place, N. W.
Brayton Omar Myers, 700 East Capitol Street
Joseph Louis Nocentini, 927 17th Street, N. W.
John A. O'Donoghue, 909 16th Street, N. W.
J. Lawn Thompson, Jr., 1735 20th Street, N. W.
Stephen F. Verges, 1401 Fairmont Street, N. W.

Associate Members

Henry Rolf Brown, 1025 Connecticut Avenue, N. W.
William Green Cushard, 703 East Leland Street, Chevy Chase, Md.
Roscoe Willis Hall, Saint Elizabeths Hospital
Arthur Alfred Nelson, National Institute of Health
Howard James Newton, 1149 16th Street, N. W.
Samuel A. Silk, Saint Elizabeths Hospital
Alexander Tish, 2659 Connecticut Avenue, N. W.
Sigmund Weiss, Saint Elizabeths Hospital

The following applicants for membership will be voted on at the stated meeting January 4, 1939:

For Active Membership

Ellis April, University of Virginia—1936
Emil Herbert Bauersfeld, George Washington University—1935
J. Roscoe Creer, George Washington University—1935
Herbert Harold Diamond, George Washington University—1936
Samuel Diener, University of Maryland—1934
Paul Eanet, University of Maryland—1926
Charles Edward Fierst, Georgetown University—1934
Melville Bendheim Fischer, Georgetown University—1913
Ray F. Guynn, George Washington University—1921
Lester Wilbur Harris, Hahnemann Medical College of Philadelphia—1935
Malcolm Douglas Harrison, Georgetown University—1933
Vincent Brewer Hungerford, Georgetown University—1934
Richard Lee Jackson, Emory University School of Medicine—1935
Ruth Jackson, George Washington University—1933
Joseph Ralph Jordan, Georgetown University—1929
Henry Marshall Lowden, George Washington University—1929
E. Parker Luongo, Georgetown University—1937
Raymond Maret, Georgetown University—1935
Frederic Augustin Moretti, Georgetown University—1932
Charles Marion Musso, Georgetown University—1935
Reginald Henry Mitchell, Long Island College of Medicine—1934

Carolyn Hannah Snyder Pincock, George Washington University—1934
Murry M. Robinson, George Washington University—1935
Samuel Shwartz, Washington University Medical School (St. Louis)—1934
Carl Silverman, Tufts Medical School—1933
Siegfried Speyer, University of Heidelberg, Germany—1910
Lewis Kaigler Sweet, Harvard Medical School—1929
Paul Robert Wilner, Georgetown University—1936

For Associate Membership

Edgar Deucher Griffin, George Washington University—1930
Martin Barbour Hiden, University of Virginia—1911

Recent changes in membership status:

Active to Associate

Daniel P. Bush
Frank Whitton Govern
Edwin Eugene Ziegler

Resigned

Active Members	*Associate Member*
Fordyce A. Hall Johnson	Wesley Long Mays
Morris Silverman	

NEWS AND PERSONALS

The Public Speaking Clinics sponsored by the Committee on Public Information have been enthusiastically received by physicians participating. Several requests have been received at the Society's Office for the establishment of new Clinics and a canvass will be made shortly to determine how many members are interested.

The Commission on Licensure of the District of Columbia requests the cooperation of Society members in the matter of employing a physician to do *locum tenens* practice. Specific cases in which Maryland licentiates have done *locum tenens* and have not been licensed in the District of Columbia have been reported. In a communication received from Dr. G. C. Ruhland, Secretary-Treasurer of the Commission, it is recommended that before employing a physician his licensure status be determined by calling the Health Department.

The American Association for the Advancement of Science, Section on Medical Sciences, will hold a Symposium on Mental Health in Richmond, Virginia, December 28-30. The program is being developed under the chairmanship of Dr. Walter L. Treadway, Assistant Surgeon General of the United States Public Health Service.

The plan for the symposium contemplates the holding of six sectional sessions over a 3-day period. For details concerning the meeting, address the American Association for the Advancement of Science, Room 822, 50 West 50th Street, New York City.

(*Continued from page 360*)

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(*Continued from page 362*)

attitude does not reflect credit on the medical profession.

As to opportunities, no one doubts that they will be greater than ever. Scientific medicine has taken great strides forward. Much has been learned, but there still remains a vast field to be investigated. Preventive medicine is practically in its infancy and its general application will open a wider field for the practitioner of the future. Under these conditions there will be greater need for more and better equipped physicians.

Less is heard nowadays about the overcrowding of the profession. One explanation is that medical schools are more selective; another, and more significant to the physician whose son desires to study medicine, is the better distribution of physicians because many practitioners are now seeking rural locations.

So we say to the doctor: If your son has a genuine feeling for medicine, encourage him. There always have been and always will be opportunities in medicine.

MEDICAL ANNALS
of the
DISTRICT OF COLUMBIA

VOLUME VII DECEMBER, 1938 NUMBER 12

ENDOMETRIAL PATTERNS IN MENORRHAGIA AND METRORRHAGIA*

JACOB KOTZ, M.D., F.A.C.S., *Clinical Professor of Gynecology and Obstetrics*, AND ELIZABETH PARKER, M.D., *Clinical Instructor in Gynecology and Obstetrics, George Washington University School of Medicine*

The endometrial findings in cases of functional bleeding have been reported frequently, but there has been a lack of unanimity of opinion both as to the structural basis and causative mechanism of the condition.

Early investigators usually described "cystic hyperplasia of the endometrium" or "hypertrophic endometritis" as the ever-present pathologic finding. The newer knowledge of female endocrinology has demonstrated the infrequency of endometritis and has indicated the necessity of a more exact usage of the terms "hyperplasia" and "hypertrophy." In the past, these terms have been used to signify overgrowth of the endometrium in the follicular phase, the normal differentiative changes of the secretory phase and, in fact, all types of functional abnormalities of the endometrium.

Taylor,[1] in reviewing 217 cases in which the diagnosis of hyperplastic or hypertrophic endometrium was made at the Roosevelt Hospital in New York in the years 1925–1928, found that the conditions so designated included only 88 cases of actual hyperplasia, the remainder consisting of 45 cases in which the endometrium was normal for the phase of the cycle, 11 cases of early or ectopic pregnancy, 7 cases of polyps and 2 cases of carcinoma. This may be considered a cross section of the variety of conditions to which the term has been applied.

Since the recognition of the nature of hyperplasia and its frequent association with functional bleeding, an extensive literature has developed on the subject, for reviews of which the reader is referred to the papers of Novak,[2] Fluhmann,[3] Burch,[4] and King.[5] · Functional bleeding and follicular hyperplasia have been considered by many as synonymous.

Reports seeking to explain functional bleeding on findings other than hyperplasia of the endometrium have appeared recently, for review of which the reader is referred to the papers of Graves,[6] Herrell and Broders,[7] Jones,[8] Traut and Kuder.[9] These have not greatly simplified the problem. While the term "hyperplasia" has been strictly delimited, many different endometrial reactions have been included in the nonhyperplastic group. Much of the confusion which exists today is due to the diversified classifications which have been presented and the individual interpretations of the terminology used.

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* Read before the American Association for the Study of Neoplastic Diseases, September 8, 1938

Since there has been this divergence of opinion as to the nature of the endometrial reaction and since hyperplasia within recent years has been in certain instances considered as a predisposing influence to the development of cancer, we felt that a discussion of this problem would not be amiss.

We have arbitrarily classified as functional bleeding only those cases in which the cycle was of less than 21 days' duration and the flow lasted longer than 7 days or was excessively profuse. This excluded cases in which there had been a change in the cycle with a shortening of the interval or prolongation of the flow, which conditions probably indicate a bleeding tendency. We have classified the cases as cyclic and acyclic, prolonged and profuse.

TABLE 1

Cases exhibiting endometria in the follicular phase

CASE	AGE	TYPE OF BLEEDING ABNORMALITY	TIME BIOPSY TAKEN	BLOOD HORMONES	
				Estrin	A.P.L.
1	35	Cyclic 12–15 days, profuse	1 day before flow	Weakly positive	Negative
2	27	Cyclic 28 days	1 day before flow	Positive	Negative
3	33	Cyclic 18–21 days	1st day of bleeding	Positive	Negative
4	21	Cyclic 12–15 days, prolonged	1st day of bleeding	Negative	Negative
5	21	Cyclic 14 days, profuse	1 day before flow	Weakly positive	Negative
6	45	Cyclic 18–21 days, profuse	2 days before flow	Positive	Negative
7	28	Acyclic, prolonged	Bleeding 1 month	Weakly positive	Negative
8	21	Acyclic, prolonged	Bleeding 2 months	Positive	Negative
9	24	Acyclic, prolonged	Bleeding 17 days	Negative	Negative

TABLE 2

Cases exhibiting endometrial follicular hyperplasia

CASE	AGE	TYPE OF BLEEDING ABNORMALITY	TIME BIOPSY TAKEN	BLOOD HORMONES	
				Estrin	A.P.L.
1	19	Acyclic, profuse	Bleeding 18 days		
2	26	Acyclic, prolonged	Bleeding 51 days	Strongly positive	Negative
3	26	Acyclic, prolonged	Bleeding 35 days	Strongly positive	Negative
4	30	Acyclic, prolonged	Bleeding 30 days	Strongly positive	Negative
5	22	Acyclic, prolonged	Bleeding 30 days	Strongly positive	Negative
6	39	Acyclic, prolonged	1st day of flow	Positive	Negative
7	32	Acyclic, prolonged	1st day of flow	Strongly positive	Negative
8	34	Acyclic, profuse	28 days after flow; 10 days before next	Strongly positive	Negative
9	23	Acyclic, profuse	Bleeding 60 days	Positive	Negative
10	30	Acyclic, prolonged	Bleeding 30 days	Strongly positive	Negative
11	34	Acyclic, profuse	Bleeding 18 days	Positive	Negative
12	23	Acyclic, profuse	Bleeding 35 days		
13	30	Acyclic, profuse	Bleeding 90 days		
14	30	Acyclic, prolonged	Bleeding 60 days	Positive	Negative

METHOD OF STUDY

We[10] have recently reviewed 300 accurately controlled cases of functional disorders of the female studied by means of the endometrial biopsy, and in this paper we are discussing 50 cases in this series in which functional bleeding was the chief complaint.

The diagnosis of the endometrial tissue was made with due consideration of the normal physiologic changes which occur in the endometrium, and an effort was made to interpret lesions in terms of deviations from the normal. A pathologic endometrium was found to differ from the normal in one of two ways: first, the structure may be normal, but the time of its occurrence in the menstrual cycle is abnormal producing the so-called persistent and delayed phase; second, the structure may be abnormal indicating some disturbance in the hormonal regulatory mechanism.

To make a comparative study possible, all biopsies were taken 1 to 3 days premenstrually in the cyclic cases and several biopsies at weekly intervals were taken in the acyclic cases. Tests for the estrogenic and gonadotropic substances were taken at the time of the biopsy.

Results of Study

In the 50 cases of functional bleeding studied, it was found that these endometria exhibited all degrees of normal differentiation as well as aberrations manifested by hyperplasia, hypoplasia, persistent or delayed reactions or senility in either the follicular or luteal phases of the cycle. The types of endometria encountered may now be described:

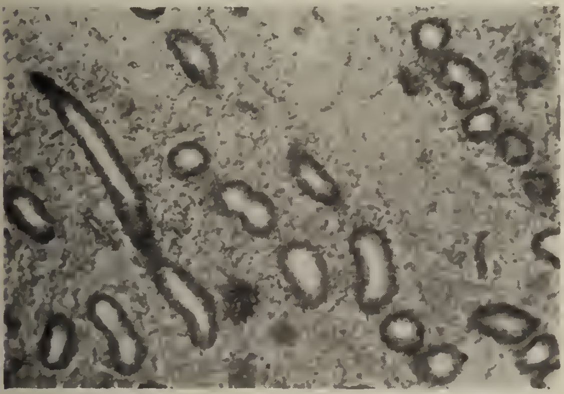

Fig. 1. Normal follicular phase endometrium

Endometria in the Follicular Phase. In this phase the endometrium was characterized by the presence of simple, straight, tubular glands lined by tall columnar, often pseudostratified cells in which there is no evidence of secretory activity; and of a fairly dense stroma made up of spindle-shaped cells having a scanty amount of cytoplasm (Fig. 1). The follicular reaction varied from nearly normal to a marked degree of hyperplasia. These degrees were even encountered in the same endometrium.

There were 9 cases in which the endometrium was of the follicular type (Table 1). Of these, there was bleeding in 5 every 2 to 3 weeks, while in 3 cases there was prolonged, acyclic bleeding. In all cases the estrogenic substance was demonstrable in the blood, although there was a tendency for it to be decreased in quantity below normal. There was no case of excessive gonadotropic substance.

ILLUSTRATIVE CASE

Case 1: G. H., aged 35, had been married 10 years without becoming pregnant. When first seen in August, 1937 she was supposed to be 7 months' pregnant. She had gained 20 pounds. The uterus was smaller than a non-pregnant one. Menstruation had always been irregular with long periods of amenorrhea followed by too frequent periods. After the first biopsy she started to bleed and flowed for 5 days. In the year that has followed she has flowed every 2 weeks with an occasional period of amenorrhea for 6 to 8 weeks. During that time biopsies were taken 1 or 2 days before 3 consecutive periods of bleeding, all of which showed the same follicular reaction, with no evidence of either hyperplasia or secretory reaction.

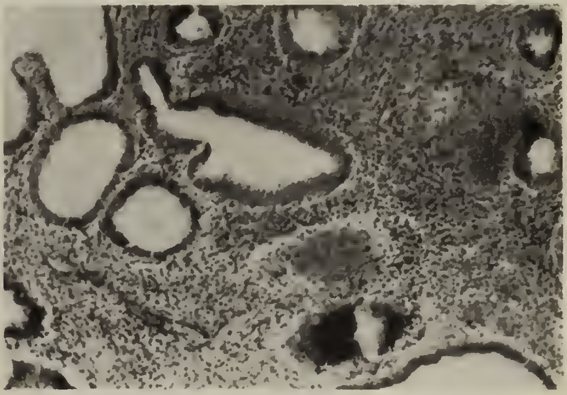

Fig. 2. Follicular cystic endometrium

There were 14 cases which exhibited follicular hyperplasia (Table 2). All of these had acyclic, either profuse or prolonged bleeding. The blood estrin test was positive in all of these cases with a tendency for the quantity to be increased in amount above normal. There was no incidence of excessive gonadotropic substance.

ILLUSTRATIVE CASE

Case 2: M. M., aged 19, single, had been having acyclic bleeding almost since the onset of the menstrual function at 14 years. She had been curetted twice and given radium once at the time she was first seen in June, 1937. She received intensive A. P. L. therapy and later snake venom, all to no avail. The first endometrial specimen was obtained by curettage and showed a typical "Swiss-cheese" reaction in some areas while others showed an intensive proliferative reaction. She spotted at 1 and 2 months after the curettage. On the first day of actual bleeding which started on the third month a biopsy was taken. This showed a follicular phase with early hyperplastic changes. Bleeding continued for 2 months in spite of therapy. In consideration of her health another curettage was done preliminary to the application of radium. This specimen again showed a typical "Swiss-cheese" reaction (Fig. 2).

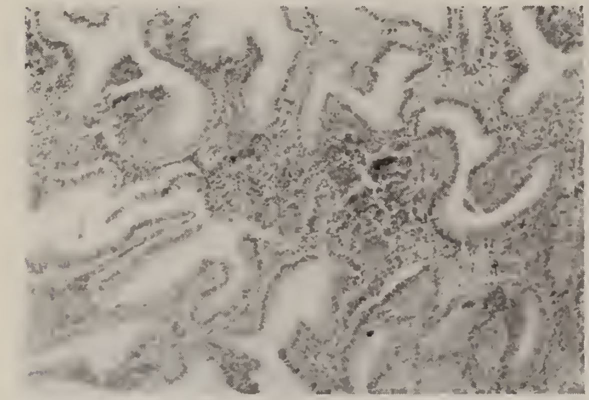

Fig. 3. Subnuclear vacuolization in normal endometrium

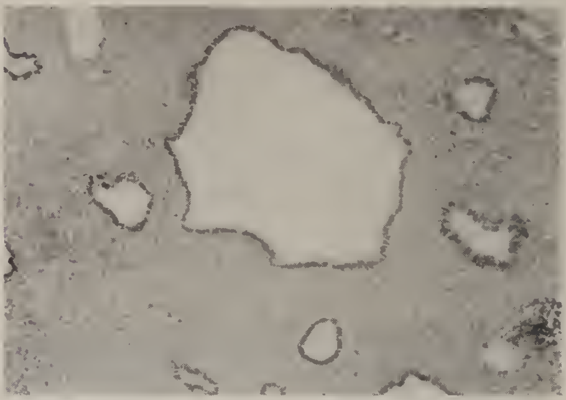

Fig. 4. "Swiss-cheese" endometrium

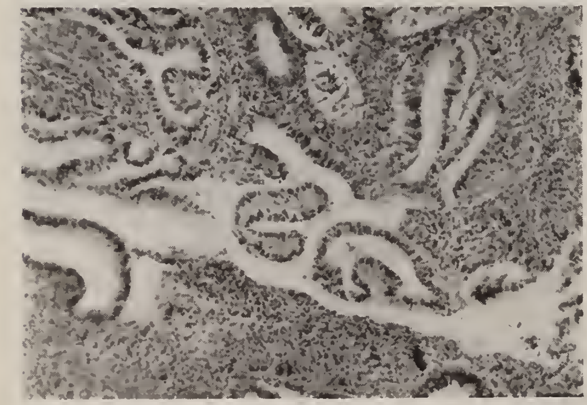

Fig. 5. Subnuclear vacuolization in hyperplastic follicular endometrium

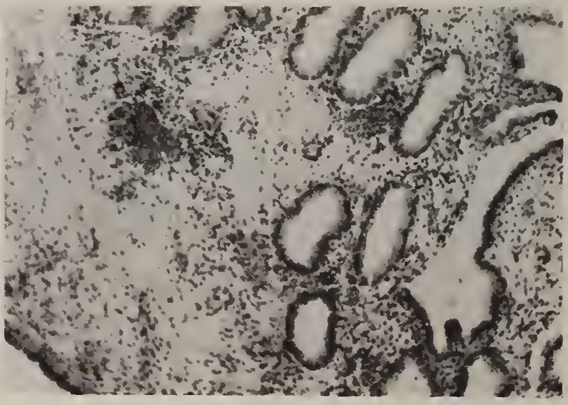

Fig. 6. Normal early secretory endometrium

In these cases presenting a follicular type of endometrium, there is complete absence of progestin action. In those with a persistent follicular phase, this represents a condition of relative hyperestrinism, since what estrin is present is entirely unbalanced by progestin; while in the hyperplastic group a demonstrable state of actual hyperestrinism is present.

Endometria Exhibiting a Delayed Post-Ovulatory Reaction. The earliest indication of secretory activity, which was described by Hisaw[11] from the endometria of monkeys, is a ranging into line of the gland cells followed by subnuclear vacuolization of the epithelial cells due to the basal accumulation of glycogen (Fig. 3). This has been confirmed in the human by Sturgis and Meigs[12] and described as diagnostic for the occurrence of ovulation within 24 to 72 hours prior to the biopsy. Overholser and Nelson[13] throw some doubt on this finding as a criterion for the occurrence of ovulation by producing the phenomenon in the endometrium of monkeys by the injection of massive doses of estrin.

We have encountered this condition, subnuclear vacuolization, in 6 cases of functional bleeding (Table 3). In 5 cases there was evidence of previous excessive proliferation, only 1 case being apparently normal. One case was acyclic and profuse, while 5 were cyclic with the interval ranging from 14 to 28 days. The blood estrin was negative in 2 cases, strongly positive in 2 cases and normally positive in 1 case. There was no incidence of excessive gonadotropic substance, a finding which might have been expected if Kurzrok's[14] test is a true criterion of ovulation. Whether this endometrial reaction indicates that ovulation occurred late after prolonged estrin action or whether it was due to the prolonged action of estrin alone cannot be determined by the data available. It is possible that both might apply, but in different cases.

TABLE 3

Cases exhibiting delayed secretory reaction—subnuclear vacuolization

CASE	AGE	TYPE OF BLEEDING ABNORMALITY	TIME BIOPSY TAKEN	BLOOD HORMONES	
				Estrin	A.P.L.
1	33	Acyclic, profuse	Bleeding 42 days	Negative	Negative
2	29	Cyclic 21 days, profuse	16 days after flow; 6 days before flow	Negative	Negative
3	36	Cyclic 28 days, profuse	26 days after flow; 8 days before flow	Strongly positive	Negative
4	16	Cyclic 28 days, profuse	28 days after flow; 1 day before flow	Positive	Negative
5	23	Cyclic 14 days	Onset of bleeding	Strongly positive	Negative
6	26	Cyclic 14 days, prolonged	26 days after flow; 4 days before flow		

TABLE 4

Cases exhibiting early secretory endometrium

CASE	AGE	TYPE OF BLEEDING ABNORMALITY	TIME BIOPSY TAKEN	BLOOD HORMONES	
				Estrin	A.P.L.
1	31	Cyclic 28 days, profuse	3 days before flow	Positive	Negative
2	24	Cyclic 28 days, profuse	1st day of bleeding	Positive	Negative
3	43	Cyclic 21 days, profuse	2 days before flow	Weakly positive	Negative
4	29	Cyclic 21–24 days, profuse	4 days before flow	Positive	Negative
5	37	Cyclic 28 days	2 days before flow	Positive	Negative
6	27	Cyclic 16–19 days, prolonged	2 days before flow	Weakly positive	Negative
7	30	Cyclic 28 days, profuse	1 day before flow	Strongly positive	Negative
8	40	Cyclic 24 days, profuse	1 day before flow	Strongly positive	Negative

ILLUSTRATIVE CASE

Case 3: M. D., aged 33, married, had been bleeding 52 days, and her chief complaint was irregular and prolonged periods. When first seen she had been bleeding intermittently for 6 weeks. Her period had always been prolonged. She had received radium at 18 years of age, was curetted at 19, and another radium treatment was given 6 months later. The only abnormality was a moderate fibrosis of the uterus. The biopsy revealed some areas which were typically of the follicular cystic type (Fig. 4), while others showed the early secretory reaction (Fig. 5).

Endometria Exhibiting Early Secretory Reaction. Immediately following subnuclear vacuolization, there is a migration of the glycogen to the peripheral part of the cells, which then take on a true secretory appearance. The glands are somewhat dilated, but there is little infolding of the epithelium. The stroma cells increase in size and the stroma becomes very loose with considerable engorgement of the blood vessels. There is no leukocytic infiltration or decidual reaction (Fig. 6).

We have encountered what seems to be an exaggeration of this phase in 8 cases (Table 4), all with cyclic bleeding, but with shortened interval in 4 cases. All complained of profuse or prolonged bleeding. Estrin was demonstrable in all, and there was a tendency for it to be increased above normal. No cases showed an excess of the gonadotropic substance.

It would seem that this type of endometrium is an early secretory reaction in which bleeding has been initiated in the presence of a high estrin level and before the corpus luteum has reached its full maturity. This endometrium seems to be similar to those figured by Graves[6] and Jones.[8]

ILLUSTRATIVE CASE

Case 4: M. S., aged 31, married, had had 4 pregnancies. Her chief complaint was very profuse and prolonged periods which had started after the second pregnancy 5 years before. Pelvic examination was negative. Blood estrin was positive and gonadotropic substance was negative. Biopsy revealed exaggerated early secretory reaction (Fig. 7).

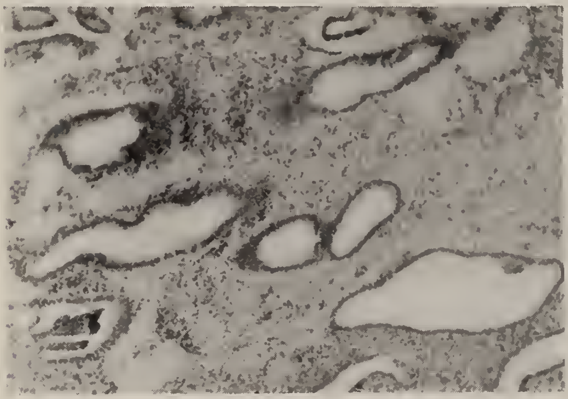

Fig. 7. Exaggerated early secretory endometrium

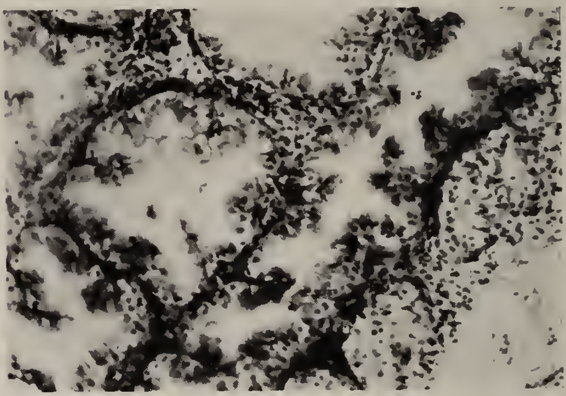

Fig. 8. Normal well-differentiated secretory endometrium

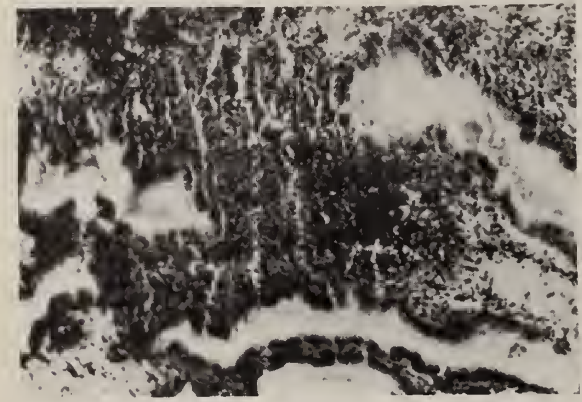

Fig. 9. Type 1 abnormal secretory endometrium (stringy)

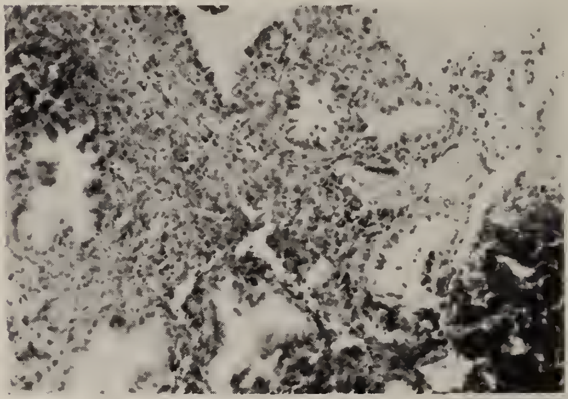

Fig. 10. Type 2 abnormal secretory endometrium (irregular shedding)

Endometria Exhibiting Variations of the Late Secretory Reaction. The typical well developed secretory endometrium shows the maximum proliferation and secretory differentiation (Fig. 8). In 13 cases in this stage of development there were variations in the endometrium which seemed to us to be distinct and which we have, therefore, arranged into 5 groups which will be described later (Table 5). Nine cases had cyclic but profuse bleeding, while the remainder were acyclic and prolonged. There was no definite correlation between the character of the bleeding and the type of endometrium encountered. The blood estrin was positive in all cases and the gonadotropic substance was negative.

In Type 1 the glands were all small, showing little tortuosity and practically no infolding of the epithelium. In most of the cells the secretory reaction had entirely disappeared leaving the gland cells flat and the glands collapsed, giving them a stringy appearance (Fig. 9). The 2 cases in which this condition was encountered gave different histories, although the appearance of the endometrium suggested that the corpus luteum action had been limited and short-lived.

ILLUSTRATIVE CASES

Case 5: S. B., aged 27, was sterile after being married 5 years. Her periods had always been regular but very scanty, lasting only 1 day, until 2 months before biopsy at which time they began to occur every 18 to 21 days and lasted 5 days and were profuse. Biopsy was taken 5 times during the past year, either just before the flow or on the first day of the flow. There has never been any variation in the endometrial picture.

Case 6: B. E., aged 16, had previously had normal, regular periods since the age of 14. Prior to the biopsy and between menstrual periods she had such a profuse hemorrhage that hospitalization and transfusion were necessary. The specimen was taken 29 days after the normal period, 13 days after the onset of the hemorrhage and just as the normal menstrual flow was starting.

TABLE 5

Cases exhibiting late secretory reaction

CASE	AGE	TYPE OF BLEEDING ABNORMALITY	TIME OF BIOPSY	BLOOD HORMONES		ENDOMETRIUM
				Estrin	A.P.L.	
1	25	Cyclic 21–24 days	1 day before flow	Positive	Negative	1. Stringy glands
2	16	Cyclic 28 days, intermenstrual	1 day before flow	Positive	Negative	1. Stringy glands
3	40	Acyclic for 4 months, prolonged	Bleeding 20 days		Negative	2. Irregular shedding
4	23	Acyclic for 4 months, prolonged	Bleeding 14 days	Positive	Negative	2. Irregular shedding
5	30	Cyclic 21–24 days, profuse	2 days before flow	Weakly positive	Negative	3. Mixed
6	22	Cyclic 14–16 days, 3 months	Bleeding 14 days	Weakly positive	Negative	3. Mixed
7	27	Cyclic 20 days, prolonged	1 day before flow	Positive	Negative	3. Mixed
8	23	Acyclic 3 months, prolonged	Bleeding 21 days	Positive	Negative	3. Mixed
9	26	Cyclic 24 days, prolonged	2 days before flow	Positive	Negative	3. Mixed
10	30	Cyclic 23 days, profuse	Onset of flow	Positive	Negative	4. Poorly developed
11	20	Cyclic 28 days, prolonged	2 days before flow	Positive	Negative	5. Normal
12	30	Cyclic 21 days, prolonged	3 days before flow	Positive	Negative	5. Normal
13	30	Cyclic 28 days, prolonged	4 days before flow	Positive	Negative	5. Normal

In Type 2 the endometrium seemed to correspond to what has been described as irregular shedding,[9] in which the glands are of normal number but have a bizarre star-shaped appearance due either to infolding of the epithelium or collapse of the gland. In some of the glands, secretion was exhausted and the cells were flattened Many large dilated vessels were present with thrombosis in some. The stroma was infiltrated with leukocytes and erythrocytes and showed degenerative changes. The endometrium had a cooked appearance (Fig. 10). This endometrium does not appear to be very different from that encountered in the first or second day of normal menstruation except that there is a slow, prolonged degeneration of the stroma.

ILLUSTRATIVE CASES

Cases 7 and 8: H. and C. had almost identical histories. They had been regular until 3 to 4 months previous, when the period became abnormally long. The biopsy was taken on the fourteenth and twentieth day of bleeding, respectively. In 1 case pregnancy was suspected, but Friedman tests taken early in the bleeding were negative.

In Type 3 the endometrium corresponds to the mixed type previously described by other authors,[9] in which there is a simultaneous occurrence of a follicular reaction, with or without hyperplasia, and secretory differentiation which is usually poorly developed. Follicular and secretory glands may occur side by side (Fig. 11), or be confined to different areas in the endometrium. Five cases showed such a reaction, 2 of which had cyclic prolonged bleeding and 3 had cyclic bleeding with intervals of 20 to 24 days with prolonged and profuse flow. All cases had a demonstrable but less than normal amount of estrin.

ILLUSTRATIVE CASE

Case 9: B. H., aged 21, had been married 4 months. Her periods had been regular except for the last 3, each of which lasted for 3 weeks. Pelvic examination was negative. Biopsy showed mixed type of endometrium.

In Type 4 the reaction was that of poor development of the glandular elements of the endometrium (Fig. 12). The glands were less than half the normal number, small and round, often containing islands of tissue. The cells were low cuboidal, with round nuclei and little secretory products in the cytoplasm. The stroma was loose, consisting of cells more of the follicular type. This type of endometrium occurred in only 1 case.

ILLUSTRATIVE CASE

Case 10: D. L., aged 34, had had 1 pregnancy 14 years before. Her periods had always been regular, but in the past year they had become more frequent, every 23 days, and profuse and prolonged.

In Type 5 the endometrium was indistinguishable from normal. Three cases with such an endometrium gave histories of cyclic bleeding at 21 to 26 day intervals, the periods being prolonged and profuse.

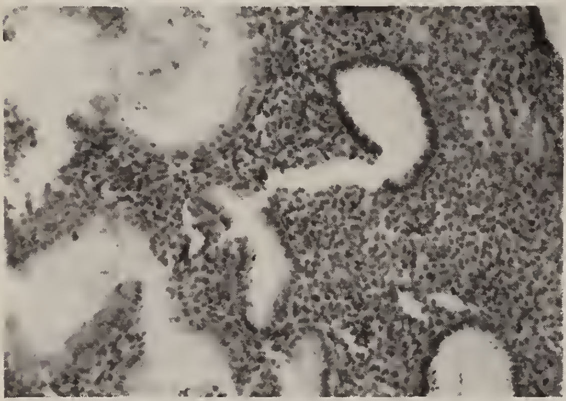

Fig. 11. Type 3 abnormal secretory endometrium (mixed)

Pelvic Disease Associated with Functional Bleeding

Functional bleeding is usually considered to be due to deficient or absent corpus luteum function. Many writers have noted the complete absence of a corpus luteum and the presence of follicular cysts in cases of hyperplasia of the endometrium. We have had no opportunity to examine the ovaries in these cases. However, on pelvic examination one or both ovaries were enlarged and cystic in 6 cases, a finding that was associated with follicular endometrium in 1 case, follicular hyperplasia in 3 cases and an abnormal type of secretory reaction in 2 cases. Previous partial oöphorectomies had been performed in 9 cases, the endometrium being of the follicular type in 1 case, follicular hyperplastic in 3 cases and of an abnormal secretory reaction in 5 cases. Two cases had been previously treated by radium, and in both the endometrium showed cystic hyperplastic changes. Burch[4] has pointed out that partial castration predisposes to endometrial hyperplasia.

The association of fibroids with endometrial hyperplasia has been noted. Some authors[15] are of the opinion that they are of the same etiology. Small fibroids were present in only 4 cases of this series. They were associated with hyperplasia in 1 case and with abnormal secretory reaction in 3 cases.

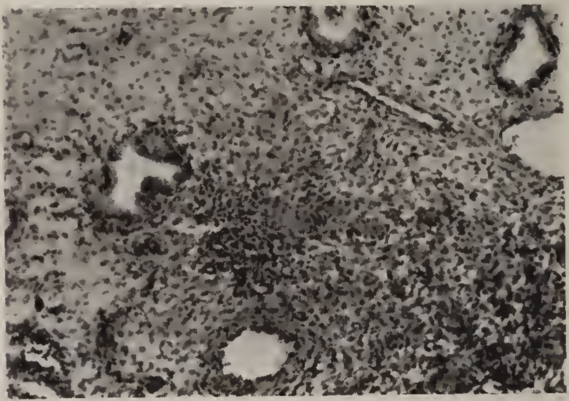

Fig. 12. Type 4 abnormal secretory endometrium

Causes of the Endometrial Changes and Bleeding

The normal endometrial cycle is dependent upon the orderly and balanced action of the two ovarian hormones. A disturbance of this mechanism is reflected in the endometrial reaction, the type and degree of endometrial functional pathology being dependent upon the degree of hormonal imbalance and the time in the cycle at which this occurred. The endometrial patterns described in this report represent a progressive failure of the corpus luteum hormone with either a relative or actual hyperestrinism.

The cause of the normal menstrual bleeding is not known. It has been ascribed to various factors by different investigators. Some are of the opinion that it is due to the withdrawal of estrin while others hold that it is due to the withdrawal of progestin, both of which are negative factors. Others have considered the cause to be positive in nature and have called it the "bleeding factor."

The cause of the bleeding is even more obscure in cases of functional bleeding. Some have sought to explain it by the above theories, while others have considered that the causative factors in normal and abnormal bleeding may be distinct. However, we believe that this series of cases indicates that such bleeding is not directly dependent upon the levels of the two ovarian hormones. In all of the endometria there is evidence of estrin action, and in all cases there was a demonstrable amount of estrin in the blood stream, and in some cases there was an excess even while bleeding occurred. On the other hand endometria were observed (indeed they were the most frequent type) in which there was no evidence of progestin action whatsoever, while there were others in which progestin action was prolonged. It seems unnecessary to seek different mechanisms for normal and abnormal bleeding. It would seem more probable that the endometrial reaction and the bleeding mechanism are distinct and that the bleeding factor is stimulated or depressed by the level of the ovarian hormones.

RELATION OF ENDOMETRIAL HYPERPLASIA TO CARCINOMA

The relation of hyperplasia to cancer in other parts of the body suggests that there may be some relation of endometrial hyperplasia to carcinoma of the body of the uterus. The fact that the hyperplasia in this instance seems to be due to an excess of the estrogenic substance lends some support to this, for it has been demonstrated that the estrogenic substance under certain circumstances may be carcinogenic. The additional fact that the estrogenic substance is chemically related to certain carcinogenic factors is suggestive. We do not mean to imply that endometrial hyperplasia is a precancerous lesion. Novak[16] in reviewing cases of adenocarcinoma of the uterus and hyperplasia reports that in an overwhelming majority of cases hyperplasia is a very frankly benign lesion, while a small minority (14 of 804 cases of hyperplasia) reveals evidence of marked proliferative tendencies which may even simulate cancer. In the study of 104 cases of adenocarcinoma of the uterus the most impressive result was the demonstration of coexisting hyperplasia in fully 25 of the cases. Taylor[1] in reviewing a similar series obtained similar findings.

CONCLUSIONS

In the series of 50 cases discussed, functional bleeding occurred in 27 or 54 per cent, in which the endometrium was in the secretory phase. Of these, 6 were associated with definite, prolonged estrin action, while others showed abnormalities in which a possibility of hyperestrinism must be considered. In 23 cases or 46 per cent the endometrium was of the follicular type, in 14 of which hyperplastic changes were evident. All of those with follicular endometrium represent either a relative or actual hyperestrinism.

The series as a whole represented a younger age group than that usually encountered in cases with follicular cystic hyperplasia as the characteristic finding. There were no instances of post-menopausal bleeding. It would seem that there are 3 degrees of endometrial abnormality which correspond to the degree of ovarian failure. First, there is the type in which an abnormal secretory reaction is present and which may be the forerunner of the next type in which follicular endometrium is the characteristic finding. Both of these types occur during the reproductive stage of life. The third type is the hyperplasia occurring after the menopause. The first two types are almost without exception benign, while malignant changes in the third type occasionally occur. The factor or factors which account for this transition cannot be explained.

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THE PNEUMONIA CONTROL PROGRAM OF THE DISTRICT OF COLUMBIA*

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From the flowering time of bacteriology and especially since 1890, in which year, now nearly a half century ago, Behring and Kitasato produced an effective immunizing serum against tetanus, and more especially since 1894, in which year Behring and Roux introduced a curative serum for diphtheria, it was fervently hoped that some day there would come out of the research laboratory a curative serum for lobar pneumonia; and at last the day arrived. The wait was long, but the journey was long and the road was rough. Like all, or nearly all, of the great happenings in medicine, progress was evolutional in kind, and the processes of evolution are apt to be slow.

Early efforts to produce a curative pneumonia serum failed of practical results, but they did not fail entirely. They succeeded sufficiently to justify the belief that there was some unknown obstacle, which, if it could be discovered and removed, would open the way for the production of serum which would rival in effectiveness the antitoxin of diphtheria. The trouble was largely unraveled and removed by discovery that pneumococci were not all alike, but were of different types and that each type differed from other types by producing its own specific antibodies. Neufeld and Haendel (1909), Dochez and Avery (1913) and Georgia Cooper (1929) discovered that there were in all 32 distinct types.

The next necessary step was to find methods of producing effective sera sufficiently concentrated and refined to be fit for clinical use. The early sera were bulky and because of their bulk and lack of refinement were apt to cause violent reactions. These faults were overcome by the work of Huntoon (1921) and Felton (1924). As a result of the work of these investigators, it became possible to produce concentrated sera for all of the 32 types of pneumococci. The sera now being produced are concentrated generally according to Felton's method.

The type-incidence of pneumonia, though not constant from year to year, through a swing of years has been found fairly constant, regardless of season and locality. The first 8 types are responsible for approximately 71 per cent of cases and tabulated are as follows:

Type	*Per Cent*
I	29
II	5
III	8
IV	4
V	7
VI	3
VII	7
VIII	8

The remaining 29 per cent of cases are distributed among the remaining 24 types, and for them data as to percentage type-incidence are not yet so exact. Types I, VI and XIV are generally considered to be of relatively higher incidence in children than adults.

While it has been found possible to produce sera for all of the 32 types, many of them are not yet to be had in the open market—the work has not advanced that far. But sera are now available at the pharmacies or supply depots for types I, II, III, IV, V, VII and VIII, and will be available for other types as rapidly as they are produced, after the worth of each has been established by the necessary experimentation and clinical trial. Some of them are in immediate prospect. The sera now readily available cover 68 per cent of all cases.

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* Read before the Society, October 19, 1938.

The sera are for the most part from immunized horses, but are also being made from rabbits, and so far horse serum and rabbit serum seem to be of about equal value unit for unit. It may be that rabbit serum can be produced in greater concentration, that is, more units per given volume, and, if so, that will be advantageous, for it will mean smaller bulk of dosage. It also may be found that rabbit serum can be produced at less cost than horse serum. For these reasons, it seems likely that rabbit serum will be largely used, provided of course that upon further trial it is found not to possess any disadvantage.

With the advent of serum therapy and growing realization of its possibilities, the treatment of pneumonia has become uppermost in the minds of the profession. Interest dates especially from 1931, in which year the subject had sufficiently advanced for the State of Massachusetts to inaugurate a serum-therapy pneumonia program. In 1935 a similar program was begun by the New York State Department of Health. The medical journals have teemed with reports, and statistical data have accumulated rapidly. The results of serum treatment, based upon statistics now in existence, are tremendously impressive—as examples, a reduction of mortality in cases of type I from 30 to 10 per cent and of types II and V, which are the deadliest, from 40 to 20 per cent and 40 to 17 per cent, respectively. In a series of 32 cases of type I treated in this city last winter the mortality was 6.2 per cent. This remarkable group will be referred to later. When we think of such facts as these, instinctively we go back in our minds to the 1890's when the introduction of antitoxin began to rob diphtheria of its terrors; to 1910, in which year Ehrlich announced salvarsan; and to 1921, when Banting and his associates succeeded in isolating insulin.

In the serum treatment of pneumonia there are some considerations of vital importance. The first of these is early diagnosis and determination of type. The lowest mortality is in the cases earliest treated. If every case of pneumonia of average severity in individuals otherwise in reasonably good condition could have serum on the first or second day of illness, the mortality rate would go down to a very low level—it may be approaching zero. Obviously such an ideal is impossible of attainment, but the more nearly it is approached, the fewer people will die of pneumonia. After 96 hours the serum is much less effective, and it becomes increasingly less effective with the passing of each day. It is, however, not devoid of value in large doses in late cases. The diagnosis must include the extent of lung tissue involved, for the more extensive the involvement the larger the amount of serum necessary. In hospitalized cases, if the amount of involvement is in doubt, as sometimes will be the case, the difficulty readily can be solved by X-ray films; in homes this is still quite possible, although more difficult. The sputum, collected in clean containers, should go immediately to the laboratory, and every laboratory should maintain 24-hour service so that specimens will be received and examined at any hour day or night—delay of even a few hours may make a difference. The Neufeld method of typing is simple and is satisfactory in about two-thirds of cases. The time required for typing by this method does not exceed 1 hour. In the other one third of cases mouse-injection is necessary and the time required is 18 to 20 hours.

Another consideration is blood culture. In about 25 per cent of cases, pneumococci can be grown from the blood—there is a bacteremia. Bacteremia increases the gravity of the illness but does not very greatly lessen the prospect of recovery, provided it is recognized early and met by increased dosage of serum. Because cases with bacteremia call for larger amounts of serum, routine blood culture should go along with sputum examination and be made without unnecessary delay.

The most frequent serious complication of pneumonia is empyema. Less frequent complications are pericarditis and endocarditis. A rare complication is meningitis. These complications ordinarily do not occur or are not recognized until the pneumonia has subsided. The chief rôle which the sera play with respect to them is one of prevention. Empyema is certainly less frequent in serum-treated cases than in cases treated without serum, and the same is true in all probability of pericarditis and endocarditis.

There is nothing more spectacular in practical therapeutics than response of the pneumonia patient to serum therapy. The temperature may be expected rather confidently to drop from a level of 103.5 or 104°F. to 100°F. within 20 hours, with corresponding improvement of other symptoms; in many cases the drop of temperature occurs within 8, 10 or 12 hours. In an almost incredibly short time the patient has passed from a condition of great anxiety and danger to a state of comparative comfort and safety.

The Health Officer of the District of Columbia is entitled to great credit for the part which he has played in bringing pneumonia in this city under control. Earnestly wishing to bring Washington abreast of other large cities, in the fall of 1937 he inaugurated a pneumonia program—essentially a serum-therapy program—among the indigent, whether ill at home, in the institutions under his direction or in other hospitals. It should be clearly understood that he was concerned solely with the indigent who were a public charge, mostly patients at Gallinger Municipal Hospital. He secured sufficient funds for purchase of a limited amount of serum and asked a small number of physicians, mostly members of this Society, but one from the U. S. Public Health Service, to serve as an Advisory Pneumonia Committee. His program was made the subject of a symposium by this Society on November 17, 1937. On the recommendation of the Advisory Committee, two of its members, because of their unusual training, were designated as Coördinators and to them was assigned the responsibility of diagnosis and treatment of all pneumonia cases of type 1 in the Health Office service. The two men selected for this important work were Dr. Theodore J. Abernethy and Dr. Harry F. Dowling.

Because of the scarcity of funds for the purchase of serum, it was decided to limit serum treatment in the winter of 1937–38 to cases of type 1. It was expected that that group alone would require more serum than could be paid for. Last winter, however, was unusually mild and the incidence of pneumonia comparatively low, so that some cases of other types might have been treated but were not. In order to prove in as clear-cut fashion as possible the specific action of serum, it was given exclusively to patients not ill for more than 96 hours, save only in 1 case which was treated on the fifth and seventh days. One case, treated early, was a postoperative pneumonia. In all there were 32 cases which received serum treatment and of them only 2 died, 1 being the postoperative case and the other the case not treated until the fifth and seventh days. This is the group referred to earlier with a mortality of 6.2 per cent. It is true that this group of cases is more selective in kind than would be permissible in private practice, for the private physician would not be justified in withholding serum because the 96-hour period had passed, but to my mind it is little less than astounding that in the 31 cases treated on or before the fourth day there should have been but 1 death and that in a postoperative case. This remarkable group of cases, too small in itself of course to be the basis of conclusions of any kind, will be discussed more in detail by others.

The Health Officer is now in a position to buy serum in larger quantities, and it has been determined to broaden the scope of his program. During the approaching winter types I, II, V, VII and VIII will receive serum treatment. These types combined cover about 60 per cent of all cases. From now on also the Health Office laboratory at the District Building, which is equipped for accurate typing of sputum and culturing of blood, will operate on a 24-hour basis. Specimens will be received at any hour day or night and given prompt attention.

Your special attention is called to the fact that the Health Office laboratory is at the disposal of physicians in no way connected with the Health Department in the diagnosis and treatment of pneumonia in indigent patients and that to such patients serum will be furnished gratis to the extent of the Health Officer's ability, whether hospitalized or under treatment at home. The only conditions are that the Coordinators shall be responsible for confirmation of the diagnosis, judges as to the necessity for serum, and responsible for the administration of the serum, and that such cases shall be considered Health Office cases for record-making purposes. There will be no disposition to displace the private physician. These statements are made for the reason that there has been some criticism to the effect that the Health Office facilities have not been utilized as fully and freely as might be. It is felt that private physicians in charge of indigent pneumonia patients may not have fully understood the opportunities and advantages open to them.

It is not my purpose to discuss the dosage of serum or the technic of its administration, but a word may be of interest concerning its cost. Pneumonia serum is expensive. The research cost of developing serum—equipment, personnel, animals, etc.—must have been enormous; but without reference to amortization of the cost of development, the cost of current production is necessarily great. It is not surprising, therefore, that the cost of serum per patient should be an item of considerable size. With the exception of serum of type III, the cost per 100,000 units of types now readily available is $66.25. The cost of 100,000 units of type III serum is $83.50. The quantity of serum required per patient varies, depending upon the amount of lung tissue involved, whether there is a bacteremia, whether treatment is begun early or late, etc. All cases considered, those for whom minimal doses are sufficient and those requiring larger doses, the average cost per patient may be put down at about $75. At first glance this may seem to be a heavy tax for a therapeutic agent. But is it? When we consider that the duration of the illness is greatly shortened and the nursing bill lessened and that the cost of oxygen tents is largely eliminated, the expense does not seem so great.

It is eminently fitting that there should be a pneumonia program for the District of Columbia, both within and outside of the Health Department. There is no reason why the death rate from pneumonia should not be as low in this as in any other city; it is the business of the membership of this Society to see that it is that low. The first present objective of such a program should be educational. The public does not need any technical education. What it needs to know first is that there is a serum for pneumonia and that it is a good thing. It would be largely a waste of time to lecture to the public or talk over the radio about 32 types of pneumococci, each with its own antigenic action, or to discuss typing methods or serum sickness. The additional information which should be gotten over to the public is that the time element in diagnosis is of vital importance and that in the presence of pneumonia or suspected pneumonia its first and most important duty is to call the doctor.

Education of the doctor is what is most needed at the present time. The doctor of today who loses time in the diagnosis of lobar pneumonia and who does not in the shortest time possible secure typing and administer the serum has fallen culpably short of his duty. The mortality from pneumonia in the District of Columbia as a whole should be as low as the mortality at Gallinger Municipal Hospital.

The Treatment of Rheumatoid Arthritis with Large Doses of Vitamin D. Our results indicate that the administration of massive doses of vitamin D in rheumatoid arthritis is of little or no value in altering the course of the disease. The general effects of the larger doses do not appear significantly different from those observed with the usual therapeutic doses and do not justify the expense and dangers involved.

Extract from article by NATHAN R. ABRAMS, M.D., AND WALTER BAUER, M.D., Boston, *Journal, American Medical Association,* October 29, 1938, p. 1638.

THE PNEUMONIA CONTROL PROGRAM, DISTRICT OF COLUMBIA

REPORT OF RESULTS OBTAINED IN TREATMENT OF TYPE I CASES*

Theodore J. Abernethy, M.D., and Harry F. Dowling, M.D., *Washington*

In November, 1937 a symposium was held under the auspices of The Medical Society of the District of Columbia to inaugurate a campaign for effective control of pneumonia in Washington. The speakers at this meeting outlined the organization, objectives and intended scope of the program and requested the advice and coöperation of practicing physicians toward making the program a success. It was announced that the Health Department had extended its facilities to give bacteriologic diagnosis and serum treatment to a limited group of indigent patients ill with lobar pneumonia. Specifically, it was stated that any physician caring for a patient sick with pneumonia in the District of Columbia who is unable to pay the usual charges for laboratory examinations could send a specimen of sputum to the laboratory of the Health Department for examination. It was also stated that in suitable Type I cases, specific antipneumococcal serum would be dispensed without charge to these indigent patients for purposes of treatment.

On account of unforeseen delays, it was not until January 1, 1938 that the program was sufficiently organized to undertake the typing of sputa and the treatment of patients. Since that time, however, a large number of specimens have been submitted to the Health Department for examination, and a limited number of patients with Type I pneumonia have received specific serum treatment. The purpose of this communication is to report briefly upon the results of the Program, obtained during the first 8 months up to September 1, 1938.

Pneumococcal Typings

In the period of 8 months ending September 1, 1938, a large number of sputum specimens were submitted to the laboratory of the Health Department for examination. Pneumococcal typing was carried out by means of the Neufeld rapid diagnostic method. In nearly every case the Neufeld technic was supplemented by the injection of sputum into a white mouse and typing carried out on the peritoneal exudate or heart's blood culture of the mouse by macroscopic agglutination. Each specimen of sputum was thoroughly studied for the presence of any one of the known 32 types of pneumococci. The experience of the laboratory has been that the Neufeld "capsular swelling" method of sputum typing gave prompt and accurate results in approximately two-thirds of all specimens examined. In the remaining third, the mouse method was necessary to determine the type of pneumococcus present.

Reports from the Health Department laboratory show that 237 specimens of sputum contained pneumococci. In 5 specimens, hemolytic streptococci were isolated on culture. Many additional sputum specimens were examined in which no pathogenic organisms were found.

In addition to performing sputum typings, the laboratory has studied blood cultures obtained in the majority of these patients. In 18 instances these were shown to be positive for pneumococci.

A total of 167 persons were found to have pneumococcal pneumonia. Type I pneumococcus caused the disease in 39 cases (23 per cent); Type VII in 13 cases (8 per cent); and Type VIII in 12 cases (7 per cent). Other types of pneumococci frequently isolated and causing more than 6 cases of pneumonia each were Types III, IV, IX, and XII.

Obviously this group of cases is too small in number and embraces too short a period of time to give an accurate picture of the type distribution among patients with pneumonia in the District of Columbia. However, when these

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* From the Laboratory of the Health Department, District of Columbia.

167 cases are combined with 185 additional cases typed in the Central Laboratory of the George Washington University Hospital in the past 4 years under the direction of Dr. Dowling, a respectable total is obtained for analysis. The combined figures show the type incidence in 352 cases as follows:

Type incidence of pneumococcal pneumonia

TYPE	DISTRICT OF COLUMBIA (352 CASES)	COLLECTED REPORTS (REIMANN) (7,801 CASES)
	per cent	*per cent*
I	29	27.4
II	5	9.2
III	8	12.7
IV	4	4.7
V	7	7.4
VI	3	2.5
VII	7	6.6
VIII	8	7.8

For purposes of comparison, the types of pneumococci in 7801 cases of pneumonia (lobar and atypical) collected by Reimann from existing reports have been included. Types beyond "VIII" have been omitted from the table for the sake of brevity. A close correlation will be seen between the type incidence of cases in the District and that found elsewhere. With the exception of the slightly higher incidence of Type I, and somewhat lower incidence of Types II and III, the figures are almost identical.

RESULTS OF SERUM THERAPY

During the first 8 months of the Pneumonia Control Program, emphasis in treatment has been placed upon Type I cases. While the value of specific therapy for many types other than Type I has been amply demonstrated in other centers, it was felt that the initial undertaking in this campaign should be confined to the type most frequently encountered and the one from which the most favorable response could be expected. Time does not permit the elaboration of statistics on the value of Type I antipneumococcal horse serum. The reports are sufficiently numerous to show that with effective serum and energetic, judicious treatment, favorable results can be obtained and the mortality substantially reduced. Moreover, it has also been shown in recent studies in Massachusetts and New York that the distribution of Type I serum among practitioners treating cases in homes and small hospitals is a practical and beneficial procedure. With these experiences in mind, the treatment of indigent patients ill with Type I pneumococcal pneumonia was begun, and up to September 1 of this year 32 patients have received specific serum therapy.

Place of Treatment. The majority of these 32 cases have been treated in hospitals throughout the city. About one-third of the total were given serum in homes in collaboration with attending physicians. A comparative list of the incidence of hospital and home cases follows:

Gallinger Hospital	18 cases
Casualty Hospital	2 cases
Emergency Hospital	1 case
Garfield Hospital	1 case
Homes	10 cases

Kind of Serum Administered. Twenty-six patients received concentrated antipneumococcal horse serum alone. This serum was purchased from two well-known manufacturers of biologicals.

Four patients received Type I antipneumococcal rabbit serum alone. This serum was kindly furnished us for experimental trial by the Squibb and Lederle Laboratories.

Two additional patients were given both rabbit and horse sera, the former kindly furnished by the Gilliland Laboratories.

Ages of Patients Treated. The majority of patients treated were below the age of 40 years. As seen in the accompanying table of ages by decade, the largest single number of patients was found in the group between 20 and 29.

Age by Decade	*Number of Patients*
0–9	2
10–19	4
20–29	10
30–39	6
40–49	4
50–59	4
60–69	1
70–79	1

Race. An analysis of colored and white patients has shown that of the total number of 32 patients, 20 colored and 12 whites received the benefits of specific antipneumococcal therapy.

Day of Disease on Which Treatment Was Begun. At the beginning of this work, it was felt desirable to restrict the use of serum therapy to those patients whose disease was of 96 hours or less duration, in other words, within the first 4 days. This restriction was imposed primarily because the funds available were deemed insufficient to treat the number of expected cases, but also because experience in other centers had shown that best results were obtained in cases treated within this period. However, as the campaign proceeded, the expected number of pneumonia cases did not appear, and ample funds were thus available for the purchase of serum. Under the circumstances, a few patients whose disease was of more than 4 days' duration were likewise treated. A summary of the treatment given according to day of disease follows:

Day of Disease	*Number of Cases*
First	1
Second	8
Third	10
Fourth	8
Fifth	3
Sixth	1
Unknown	1

It will be seen that only 1 case was treated on the first day of disease, 8 cases on the second day, and the largest number, 10 cases, on the third day. The failure to secure early treatment may be accounted for in several ways: (1) The majority of the patients were colored, a race notoriously slow in seeking admission to hospitals; (2) delays were occasionally encountered in the prompt clinical diagnosis of pneumonia; (3) delays were frequently experienced in the prompt transmission of sputum to the Department of Health laboratory.

Amount of Serum Used. It is a well-known fact that the amount of serum necessary to treat any given case of Type I pneumonia is distinctly variable. The duration of disease before treatment is begun, the presence or absence of bacteremia, the leukocyte response, and the presence of other complicating conditions such as empyema, are all factors which profoundly influence the outcome of the disease. It has been shown that as little as 60,000 units may be sufficient to treat the average uncomplicated Type I case on the first day. Increasingly larger amounts are necessary the longer treatment is delayed. In the presence of bacteremia, usually twice the amount of serum is necessary for a therapeutic effect. It has also been shown that in patients with a poor leukocyte response, more serum is needed. The presence of some other complicating factor, such as empyema or pericarditis, may require unusually large doses of serum.

Nevertheless, from studies carried out in the Massachusetts Pneumonia Program and elsewhere, it has been shown that a dose of approximately 100,000 units is needed to treat the average case of Type I pneumonia.

In the present study of 32 cases 158,000 units was the average amount used. Tabulated by day of disease, the figures are as follows:

DAY OF DISEASE	NUMBER OF CASES	AMOUNT OF SERUM GIVEN
		units
1	1	100,000
2	8	155,000
3	10	188,000
4	8	167,000
5	3	180,000
6	1	300,000
Unknown	1	60,000

The large amount of serum given to patients in the present series is admittedly more than the average reported necessary from various other studies. However, the following facts should be considered: (1) The total number of cases treated in this series was small, (2) the majority of the patients were given serum late in the disease (it is believed that if more cases are treated earlier in the disease, this figure can be substantially reduced); and finally (3) no attempt has been made in this study to give a minimal amount of serum.

Method of Serum Administration. The usual precautions have been taken in the administration of antipneumococcal serum. These have included the taking of a careful history regarding any known allergy such as hay fever, asthma, eczema or other sensitivities, as well as previous treatment with horse serum. A preliminary conjunctival test and intradermal skin test with 1 to 10 dilution of normal horse serum has been done on every patient. These have been read in 20 to 30 minutes. The conjunctival test, if positive, manifests itself with dilated blood vessels, increased lacrimation, and sometimes by itching. The skin test, if positive, shows varying degrees of erythema and wheal formation with pseudopods of edema extending out from the original wheal. If the above tests are negative or even positive to a slight degree, it has been our practice to proceed then with a preliminary intravenous injection of therapeutic serum. For this purpose, usually 1 c.c. and occasionally 10 c.c. of 1 to 10 dilution of serum has been given very slowly at a rate not exceeding 1 c.c. per minute. If no untoward localized or systemic allergic symptoms developed after 30 to 40 minutes, a full therapeutic dose of serum has been given intravenously. In cases treated in homes, it has been our practice to give the serum in somewhat smaller doses, by syringe, undiluted, simply for the sake of technical convenience. In the hospitalized cases the serum has usually been suspended in 200 to 300 c.c. of normal saline and given slowly by intravenous clysis.

In the present study we have been guided by recent published articles which have shown that a large initial dose of serum may be more effective than smaller doses given over a period of time. Accordingly, in many cases a large initial dose, usually 80,000 or 100,000 units, has been given at a single injection. Subsequent doses were injected as indicated by the condition of the patient.

Serum Reactions. An analysis of the treated cases has shown that 6 of the 32 patients gave a definite history of allergy. Three of these patients had received horse serum 1, 3 and 8 years, respectively, before contracting pneumonia. Four of the 6 patients showed urticaria of moderate degree during the administration of serum, but not sufficient to interrupt the treatment. The conjunctival test was positive in only 1 instance; the skin test in no instance; and the intravenous test in only one instance. Despite this low incidence of positive reactors by preliminary tests, nevertheless the administration of serum was followed by certain reactions. Usually these were of the chill, thermal or urticarial type mentioned above. They were readily controlled by the injection of epinephrine subcutaneously, nitroglycerin under the tongue, or the intravenous injection of calcium salts. No instance of anaphylaxis occurred. In 18 patients, serum was given without any reaction whatever. A tabulation of the reactions is as follows:

Type of Reaction	*Number of Cases*
Chill	8
Fever and Sweating	4
Urticaria	5
Circulatory Collapse	0
None	18

Elapsed Time Before Temperature 100 Degrees or Below in Recovered Cases. Of the 30 recovered cases it was possible, in 27 instances, to estimate the elapsed time before the temperature reached 100°F. or below. Such an analysis has shown that 20 hours was the average time after serum was given before evidence of recovery had definitely appeared.

Complications. Bacteremia was present in 5 patients, all of whom recovered. Auricular fibrillation occurred in 1 of these 5 patients with bacteremia. Jaundice was noted in 2 cases. Pregnancy complicated 1 patient's illness, but she eventually recovered without miscarriage. Empyema was encountered in 2 patients, both of whom subsequently recovered. One of these patients required surgical drainage. Serum sickness was noted in only 4 instances, and in only 1 patient was it severe.

Mortality. Two of the 32 patients died, giving a mortality rate of 6.2 per cent. One of these patients had a postoperative pneumonia, was treated on the third and fourth days of disease with 280,000 units of serum with excellent response, but died on the ninth day following apparent recovery. Autopsy showed no pneumonia, and death was attributed to myocardial failure. In the other patient, treatment was begun on the fifth day, and because of a misunderstanding on the part of the house officers was not sufficiently energetic; 220,000 units was given to this patient whose pneumonia was further complicated by a Type IV infection, but death resulted.

Cases Not Treated. No attempt has been made in this study to gain a control series of untreated Type I cases. In the last 20 years the expected mortality rate has already been well established in large series of cases throughout the country. Heffron's study of 1614 cases collected from the literature has shown that a mortality rate of 25 per cent may be expected in the untreated Type I cases. Reimann states that the mortality rate among all patients untreated with serum is about 32 per cent. Obviously these figures are capable of further analysis with respect to the presence or absence of complications, particularly bacteremia, which have been shown to affect mortality in the untreated, as well as the treated cases. In consideration of the abundant evidence in the literature to the effect that the mortality in untreated cases is between 25 and 32 per cent, we have felt it unjustified to withhold serum in suitable cases simply for the purpose of obtaining a control series.

However, during the course of the campaign, 16 patients with Type I pneumonia were seen, to whom no specific treatment was given. Most of these patients were seen late in the disease and were well on the way toward recovery.

Serum was withheld in a few cases because of the existence of complicating factors, such as pericarditis or endocarditis, in the presence of which serum therapy is known to be of little effect. Of these 16 patients, 4 died, giving a mortality rate of 25 per cent in the untreated cases. Obviously this series is too small a group to receive more than passing consideration. These approximate figures are given solely for the purpose of comparison with those obtained from other centers on larger, adequately controlled series.

SUMMARY

In spite of the short period in which the Program has been operative, and in spite of the unusual scarcity of pneumonia in Washington during the past winter, definite progress has been made in the control of this disease in the District of Columbia. The Health Department laboratory has accurately typed a large number of pneumonia cases. In this way probably more patients have received bacteriologic study than ever before in the District. The information thus obtained should prove invaluable for epidemiologic study. The results obtained in the treatment of 32 cases have shown a significant reduction in the mortality rate, from an expected 25 per cent to 6.2 per cent. With an organization now available for efficient operation and the extension of the campaign to include treatment of Types II, V, VII and VIII cases, further progress toward effective control of this disease is to be expected.

Infarction of the Lateral Wall of the Left Ventricle: Electrocardiographic Characteristics. Evidence is presented in this paper which suggests that acute infarction in the left lateral wall of the heart produces in the electrocardiogram a depression of the RS-T interval in Lead IV and usually a depression of this interval in Leads I and II. Lead III shows no characteristic abnormalities. . . . Left circumflex artery thrombosis is usually responsible for infarction in the left lateral wall of the heart. However, when this vessel carries an unusually large part of the myocardial blood supply, its obstruction may give rise to more extensive infarction, with complex electrocardiographic patterns.

Extract from article by FRANCIS C. WOOD, M.D., CHARLES C. WOLFERTH, M.D., AND SAMUEL BELLET, M.D., Philadelphia, *The American Heart Journal,* October, 1938, p. 399.

CHRONIC APPENDICITIS*

A CONSERVATIVE SURGICAL VIEWPOINT

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Chronic appendicitis, by some termed a misnomer and by others denied altogether, has always been a source of controversy. Every one is agreed that the recurrent appendicitis or chronically inflamed appendix following an acute attack, like Gog of Magog, should be ruthlessly exterminated. Mimicking the symptoms of peptic ulcer and chronic cholecystitis, and causing many functional disturbances, such an appendix, no one will deny, should be *spurlos versenkt*—preferably in formaldehyde. However, in consonance with the majority of surgical opinions, we shall admit that there is such a disease as chronic appendicitis per se, and accept the terminology.

Let us rather concentrate our discussion on the necessity for a more careful and painstaking diagnostic approach and a more conservative viewpoint in the treatment of this disease. Consider the thin, pasty, dysmenorrheic young woman, worried about her acne, who comes in complaining of an uncomfortable feeling in the right lower abdomen, and who asks timidly whether she has appendicitis. Or it may be the obese, constipated female with large hips and thin arms and slender legs, who menstruates scantily and irregularly, is tender to the slightest touch and still more tender to the ever so slightly greater thrust at McBurney's point, who becomes a diagnostic problem. Or is it the tall, slender, ptotic young man who smokes excessively, eats irregularly, who complains of epigastric drag and discomfort after meals; whose aorta and iliac vessels are easily felt and are tender to pressure and whose cecum is gurgly? Is an appendectomy through a neat little incision going to cure these? And yet many of us have seen these patients and with the same complaints postoperatively, only the scar in the right lower quadrant giving mute evidence of wrong judgment on the part of an overzealous and optimistic surgeon.

And is such treatment as innocuous as the extirpated appendix? Aside from the conservative figure of 0.5 per cent mortality in elective surgery, consider the approximate 10 per cent morbidity as evidenced by wound infection and other postoperative complications. And if one were to add the mental torture caused relatives and friends, the economic hardships, the disturbances and readjustment, whether from the patient's family or the employer's standpoint, the cost is appalling indeed. It is apparent, therefore, that care in diagnosis is of paramount importance. And yet not only is the diagnosis difficult from the clinician's viewpoint; but even after the appendix has been removed, is it at all certain whether the correct diagnosis has been made—judge it as you will? The pathologist will have missed the kinks or anatomic derangements found in the abdomen and will have only the macroscopic and microscopic examination by which to form an opinion. And this, the pathologist admits is very disappointing. The appendix with obliterated tip or an atrophic mucosa may be symptomless and it may be one which has caused functional disturbances. It is not always possible to distinguish the two, the physiologic from the pathologic.

And if the pathologist cannot check on the diagnosis it becomes all the more important for the clinician to be extremely cautious in the diagnosis of chronic appendicitis. For even if an appendectomy has given relief it is as much proof of the correctness of the diagnosis as any post hoc, ergo propter hoc argument. One cannot be too sure but that the surgeon has used the scalpel as a psychotherapeutic measure, an expensive and hazardous measure to be sure. What an immense psychologic effect there must be to an operative procedure for a lonely, misunderstood, self-sympathizing soul! What an escape from an intolerable environment! Picture the fuss and furor of preparation, the sympathy of relatives and friends, the professional sotliciude of nurses and interns, and the unctuous, superheterodyne, bedside personality of the God-Surgeon himself—in person! Why, who wouldn't have a few pesky gas pains and have all that in recompense—not to speak of the wonderful theme for conversation at future bridge tables?

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*Read before the Jacobi Society, October 17, 1938.

Careful history-taking and a careful physical examination are taken for granted. But what of the laboratory? The roentgenologist is of immense help in ruling out organic disease in other parts of the body, but any reference to chronic appendicitis as a roentgenologic diagnosis should be scrutinized and evaluated with care. The roentgenologist should report his findings objectively, such as cecal adhesions, kinks, displacements or tenderness over the visualized appendix. He may report that the appendix is not visualized or that it does not empty. But for the roentgenologist to report chronic appendicitis on his findings alone is presumptuous to say the least. And if he has gone into the patient's history and then made his roentgen examination even his roentgenologic findings are untrustworthy, for they may have been influenced by a subjective history. That is the pitfall of the clinician who does his own roentgen-ray examinations. The same holds true of the hematologic examination. It amuses me to have half a page of conclusions made on the basis of a single blood count, and made by a hematologist who hasn't even seen the patient. A slight leukocytosis, especially when no cognizance is taken of a previous meal, or the many other causes, physiologic or otherwise, is most certainly too flimsy a peg upon which to hang any diagnosis.

Before a diagnosis of chronic appendicitis is made with a recommendation for surgical intervention the clinician must correlate all the facts and he must study the patient exhaustively, not only from the physical but also from the mental side. Purgatives are dangerous in suspected appendicitis but mental catharsis may prove to be curative in many cases. A searching and painstaking inquiry into the patient's everyday life, his environment at home and at work, his habits, his likes and dislikes, is most essential. It is not necessary to be a psychiatrist to probe gently into the patient's mode of living, for every physician, if he is at all successful, is a psychologist. A little interest evinced in a narrative begun and kept in motion by a few deftly placed remarks will reveal much that is helpful in arriving at a correct diagnosis. Surely if one admits that a spastic colon or pyloric sphincter may be due to an overwrought mind, why not a functionally disturbed appendix for the same reason? Of course a nervous individual may also have chronic appendicitis, and not infrequently such a patient may be termed erroneously a neurotic. But the argument is still valid that delay in such a case sufficient to initiate more conservative treatment such as change of habits, use of a bland diet, and possibly some antispasmodic, will not be dangerous. Perhaps a few examples will illustrate this:

Case 1. A. L., a 27-year-old mother of an 8-year-old girl, complained of right lower abdominal discomfort. Six months previously she had had an attack of abdominal pain for which a gynecologist advised an immediate appendectomy at 2:00 A.M. She refused to take the advice. One year before she had had a nervous breakdown. She took her aches and pains to various physicians. She had been advised she had ovary trouble, and endocervicitis, salpingitis, appendicitis and what-not. She had diathermy treatments, cauterizations, and colonic irrigations, with no appreciable improvement. On examination she had palpable and tender ovaries, and was slightly tender in the right lower quadrant. On further questioning the reason for her breakdown and the nocturnal abdominal pain episode became quite evident. She was extremely jealous of the greater attachment of the little daughter for her father. A second pregnancy was advised and the arrival of the second child has cured her appendicitis at least for 5 years.

Case 2. M. C., an 18-year-old girl, came in complaining of nausea, anorexia, bloating and abdominal discomfort. She suffered from chronic constipation and was much concerned about a slight acneiform eruption on her back. She was worried about having appendicitis. She was a slender, somewhat undernourished young woman, with a low blood pressure. Except for a slight acneiform eruption and slight tenderness over McBurney's point the examination was negative. Occasionally in the next 2 years she returned with similar complaints although her constipation was cured by proper dieting prescribed by her family physician. Her mother was still worried it might be appendicitis, but an appendectomy was not advised because the symptoms were too changeable and varied on different visits. To my surprise the young lady, now 21, is the picture of health, free of all complaints. She has had the tilt of her nose changed, which she admits was the sole cause of her worry and digestive disturbances.

Case 3. A. L., a man aged 21 years, came in complaining of pain in the right lower abdomen of 6 months' duration, for which he had been advised to have an appendectomy performed. He admitted he was nervous, blue and depressed. He felt he was going to die at times. On further questioning he explained he had been that way since the announcement of his betrothal. This led to the further information that he had indulged in reciprocal masturbation with his intended, which apparently was responsible for the frequent nocturnal emissions he experienced. These disturbed his sleep and weakened him. As was predicted, his symptoms disappeared as soon as he was married. But interesting to relate, it was his wife who now came with the same diagnosis of appendicitis; and in the light of her husband's history questioning brought out that she was very nervous since she was married because her husband failed to consummate the act to her satisfaction due to premature ejaculations.

Case 4. A. R. was an 11-year-old girl who had been having "stomach-aches" for the past 3 weeks, some nausea and occasionally vomiting, but never any fever. Her family physician was unable to find anything definitely wrong with the girl but suspected she had appendicitis. On examination she was found to be in good health except for nervousness as was evidenced by her biting her finger nails. She was in the sixth grade and was better than average in her studies. It was brought out on further questioning that she was worried about her new teacher in school and was afraid to go to school one morning because she was uncertain about her lessons that day. She admitted feigning abdominal pain but she did feel nauseated and had no appetite when she began to think of that "terrible slave-driving teacher who piled her up with home work." Here was a high-strung, nervous girl, who was taking school too seriously, at times staying up till 11:00 P.M. to finish her home work, and her escape was a gastrointestinal upset, real or feigned. The exact psychiatric classification here is unimportant, but the recognition of the underlying cause of the patient's difficulty is very important.

Case 5. Mrs. E. M., a mother of 2 children, came in complaining of pain in the right lower abdomen, backache and nervousness. She had been advised to have an appendectomy. She was slightly tender over McBurney's point, her left ovary was tender, and her uterus was markedly retroverted. She also had some curvature of the thoracic spine. On further questioning, the patient's real difficulty was her nervousness which was brought on by dyspareunia. In fact, she complained of being sick in general for several days after coitus. Still further questioning revealed that she loathed her husband sexually, his very approach to her bed making her extremely nervous. She admitted that her husband was very kind to her, attentive to her every desire and a good provider, but physical contact with him was repulsive to her, although the husband was in no way repulsive in physical make-up. Finally the real cause of the difficulty was obtained. She had been courted for 5 years by another man and then jilted. In fact, she had enjoyed sexual relations with this man, and there never had been any dyspareunia or postcoital discomfort or pain then. When she was jilted by her lover she married, and her husband was simply a compromise. The problem was a little too complicated to be treated by a surgeon, and she was told to consult a psychiatrist. I advised her that some of her difficulty might be due to the retroverted uterus, especially since her backache was always worse during menstrual periods, but I refused any surgery unless she understood perfectly that she would not have her real difficulties solved by an operative procedure.

One could continue with such examples, each one showing some difficulty in adjustment as the cause of some abdominal discomfort which could be diagnosed as chronic appendicitis. And in such a condition in which the surgeon is judge, jury, and even at times executioner, and where there is no possible way of ever exposing himself to censure—for who is there to deny him—there remains but one's conscience between surgeon and patient. And one's conscience should be eased by fortifying himself with a thorough examination of the patient both physical and mental before subjecting him to an operation which is not without hazard and which certainly entails a good deal of expense.

The Etiology of Nausea and Vomiting of Pregnancy. This is only a preliminary report, but I believe that the uniformity of the results of the intradermal tests, the good results on the patients treated along the lines of allergic desensitization and the huge number of women afflicted with these symptoms at all times merits an investigation on a large scale. It would also be of interest to test with intradermal progestin a series of young girls before puberty. . . . .

Conclusions.—1. The nausea and vomiting accompanying pregnancy is due to an allergic sensitivity of the patient to the secretion of her own corpus luteum of pregnancy.

2. Desensitization may be accomplished by injection of graduated doses of progestin, thus alleviating or stopping the patient's symptoms.

3. Intradermal testing may determine, even before pregnancy, whether a patient will or will not be nauseated when pregnant by determining whether or not she is sensitive to progestin.

Extract from article by J. William Finch, M.D., Hobart, Okla., *Journal, American Medical Association,* October 8, 1938, p. 1370.

HEMATOLOGIC INTERPRETATION IN GENERAL PRACTICE

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The object of this paper is not to consider the numerous and complicated theories underlying the various diseases of the blood and the blood-forming organs, but rather to consider, in a very brief way, the mechanism of blood formation and the results of disturbance of this mechanism.

At the outset we must admit that we know very little concerning the etiologic agents responsible for the disruption. This is more true especially of the dysfunctions of the leukopoietic tissues.

However, it is true that in recent years concrete evidence has accumulated which leads us to believe that many, if not all, blood dyscrasias have a chemical factor or group of factors as the underlying etiologic agent.

A consideration of the various theories concerning diseases of the blood would necessitate too much time and space for a thorough consideration. Let us therefore consider first the red blood cells and see if we can arrive at some reasonable and simple understanding of some of the abnormalities of this part of the blood. To appreciate these changes let us consider for a minute the origin of the red blood cells, for it may be in the morphologic development of the red cells that we may get some insight into abnormalities.

The most logical and perhaps most generally accepted theory as to the origin of the red blood cells is that they arise from the endothelium of the capillaries in the bone marrow under control of the three factors of (1) constriction or collapse of the capillaries, (2) slowing of the circulation as the result of the collapse and (3) a low oxygen tension. When all three factors are at work in a normal, rhythmic fashion the result is a normal, active erythropoiesis. The origin of the red cell is brought about by a division of the lining endothelial cell. The outer daughter cell is set free into the lumen of the capillary to become the embryonic red cell or megaloblast. The inner daughter cell remains in place and by further division gives rise to other embryonic cells.

The free floating or unattached embryonic cell, the megaloblast, now undergoes maturation and is the earliest recognizable red blood cell. The megaloblast continues through the various steps of maturation as the macroblast, which is often described as early and late, the normoblast, the reticulocyte and the erythrocyte.

The change from megaloblast to erythrocyte is fairly rapid under normal conditions and is confined practically entirely in normal adults to the confines of the bone marrow.

Two factors control this normal maturation; one is Castle's antianemic factor of liver, which controls the maturation of the megaloblast to the normoblast, and the second is iron, which is responsible for the production of hemoglobin. Hemoglobinization starts before the normoblast is developed and aids the further division of the cells until they reach the normoblast level, for once this stage is reached there probably is no further division.

Diagramatically we have:

Endothelial cell Megaloblast Macroblast	Controlled by hematopoietic factor (Castle's antianemic factor)
Normoblast Reticulocyte Erythrocyte	Controlled by iron

From this maturation process can we find anything to consider that might be of significance in interpreting abnormal blood pictures? First let us consider the megaloblast. Under normal conditions there are very few megaloblasts in the bone marrow. Roughly, 4 to 5 per cent would be considered a good number. Soon after birth the bone marrow contains large numbers. They are never seen in the circulation under normal conditions. They are found in the circulation in a few pathologic conditions. In children it is not unusual to find megaloblasts in the circulation as a result of overstimulation of the marrow. If our theory of maturation is correct, then this megaloblastemia is produced by a disproportion between the amount of stimulation, brought about by too great a demand, and insufficient amounts of Castle's antianemic factor. The insufficient amount of this latter factor may be due to several causes. First, since it is produced in the stomach, there may not be sufficient produced in a small-sized stomach of an infant, or second, it may not have been stored in sufficient amount in the liver to comply with the demand.

In pernicious anemia the presence of megaloblasts in the circulation is quite often noted, especially during relapses. Here again the antianemic factor of Castle is probably absent or diminished to a large extent, in consequence of which the bone marrow becomes crowded with megaloblasts. Nót being able to continue through the next stage of maturation they sooner or later gain entrance into the circulation. Their presence in the circulation is considered by some as diagnostic of this condition.

In leukemia it is not unusual to find megaloblasts in the circulation, but here this is evidently due to overcrowding of the bone marrow by leukemic cells interfering with the normal functioning of the marrow. Also, the possibility of leukemic infiltration of the liver interfering with the storage of the antianemic factor must also be considered.

Macroblasts and normoblasts are the predominating cells of the bone marrow. Normally they are not seen in the circulation. They will, however, appear in the peripheral circulation if for any reason the rate of destruction or blood loss exceeds production. An anemia due to hemorrhage, for example, may show normoblasts or even macroblasts depending upon the degree of demand. Ordinarily in normal people the presence of these nucleated red cells is of temporary duration and one should not become alarmed when they are found. A much better index of the amount of work being done by the bone marrow during or after a hemorrhage would be a reticulocyte estimation, because a high percentage of reticulocytes would indicate a good reserve strength of the marrow with normal maturation powers; whereas a low reticulocyte count with many nucleated cells would indicate too rapid a blood loss or destruction and inability to undergo proper maturation and division and therefore a low bone marrow reserve. Consequently an anemia results plus an erythroblastosis. Such a condition is seen in hemolytic jaundice, erythroblastosis of the newborn, sickle-cell anemia, von Jaksch's anemia and certain stages of leukemia.

The presence of nucleated red blood cells occurs also during periods of congestive failure when the circulation is sluggish and dyspnea results from the anoxemia. This is due to the demand for more blood to convey the necessary oxygen to the tissues and is really a mechanism to compensate for the sluggishness of the circulation. It is quite possible that these nucleated cells are seen during periods of congestive failure because the maturation factor has been depressed and is not able to keep up efficiently with the demand.

Considering the chemistry of the red blood cell, we know that the solids of the red cell are protein, hematin and globin. We also know that hemoglobin is elaborated in the stroma of the red cell by a polymerization of the iron compounds of pyrrhol with the amino-acids of globin. Therefore, a deficiency of any one of the above elements could readily result in an anemia. Today, however, a further classification of the anemias is followed, one group being known as the hypochromic, microcytic anemias, believed to be due to a deficiency of iron, and another as the hyperchromic, macrocytic anemias believed to be due to a deficiency of the antianemic factor of Castle.

Variations in size, shape and staining characteristics of the red cells occur in various anemias. The most important conditions in which anisocytosis occurs in the form of a macrocytosis is in pernicious anemia, anemias due to liver damage, von Jaksch's anemia, anemia of the newborn, sprue, carcinoma of the cervix, Bothriocephalus latus infestation, and occasionally in treated cases of syphilis. The macrocytosis in these conditions is due to an abnormal or aborted type of erythrogenesis. The cell fails to mature properly and loses its nucleus before the cytoplasm has decreased to normal size. This is undoubtedly due to a deficiency, faulty absorption, or faulty storage of the maturation factor (Castle's antianemic factor). When thinking of the size and staining characteristics of red blood cells one should always remember that the younger the cell, the larger and greater the tendency toward polychromatophilia.

In a discussion like this it is practically impossible to consider a classification of anemias with an idea of considering each one separately. However, I feel that it would be well to at least call your attention to the latest classification which one sees very often in the literature. This has to do with the number, size and hemoglobin content. In descriptive terms we have:

	NUMBER	HEMOGLOBIN CONTENT	SIZE
Normal......	Normocythemic	Normochromic	Normocytic
Decreased....	Hypocythemic	Hypochromic	Microcytic
Increased.....	Hypercythemic	Hyperchromic	Macrocytic

From this classification there are 27 mathematical combinations. In general the majority of anemias are hypocythemic; hyperchromic anemias are always macrocytic; and hypochromic anemias are usually microcytic or normocytic. Anemias in which erythrocytes are normal in number (normocythemia) are usually hypochromic. Occasionally in children and adults a polycythemia with hypochromia is found.

A blood picture showing any degree of anemia is only an outward manifestation of what is going on in the bone marrow. It should never be considered as a primary condition per se, because the peripheral circulation is only the mirror in which the hematopoietic activity is reflected.

Furthermore, a correct interpretation of a blood picture cannot always be made by a technician. In fact, it may not be made by a trained hematologist.

It is an inborn habit of doctors, acquired through generations of association, to walk into a hospital laboratory and ask the pathologist what he thinks so and so has or what is wrong with her or him after looking at a blood smear. If the answer is honest it would be made entirely regarding the activity of the bone marrow which then may or may not be interpreted or associated with the clinical picture. All other discussion is just pleasant to the vibratory sensation of the eighth cranial nerve.

The past several years with their rapid accumulation of new knowledge in hematology has caused a tremendous amount of confusion in the minds of the busy general practitioner. This confusion often amounts to a dilemma when it comes to interpreting blood reports, especially those pertaining to the white blood cells.

Here, as in the red blood cells, a knowledge of the origin of the white blood cells or leukocytes is necessary.

From the standpoint of practical application I feel it is unimportant for one to know that there are three different schools, each one teaching its principle of origin of the blood cells: the monophyletic school teaching that all blood cells have a single common ancestor; the dualists maintaining that the white blood cells arise from two separate stem cells, one for the lymphocytic series and the other for the granulocytic group; the trialists still further complicating the picture by inserting a third stem cell to account for the origin of the monocytic cells.

Nobody as yet has been able to prove definitely any of the above theories.

Without quibbling about the parents of the white cells we must admit that they arise from a parent cell regardless of whether we call it a haemocytoblast or just plain stem cell. This cell causes no difficulty in interpreting a blood smear because it is not seen in the circulating blood. In the adult it confines its activities entirely to the bone marrow.

From a practical standpoint, therefore, it is important to know that the earliest or youngest white blood cell to be seen in the circulating blood is a daughter cell of the stem cell commonly known as the myeloblast. This cell goes through a process of maturation reaching the stage of a mature normal polymorphonuclear leukocyte with three lobes to the nucleus. In the end it will be any one of the three granulocytes, neutrophilic, eosinophilic or basophilic, depending upon what type of granule develops in the cytoplasm. Most of these cells are of the neutrophilic type, as would be expected, because they are the most common.

All of this maturation process under normal conditions takes place in the bone marrow, and the cells enter the circulation when they reach maturity.

If for some reason, as in infection, there is a demand for more white blood cells, these will appear in the peripheral circulation in the mature form as long as the maturing power of the bone marrow is capable of keeping pace with the infection. If, however, the infection should happen to be an overwhelming one, or if the reserve power of the bone marrow to produce normal cells has been reduced by some toxic element as it usually is during an infection, we then see the result in the appearance in the circulation of various immature myelocytic cells varying from myeloblast to mature polymorphonuclears, depending upon how severe the infection is or how much depression there happens to be to the bone-marrow function.

To properly evaluate a blood picture, therefore, one should at least know the stages through which a polymorphonuclear cell passes to reach maturity, because a reversion toward immaturity in the circulation indicates something abnormal.

Diagrammatically represented we have: myeloblast → premyelocyte → myelocyte → metamyelocyte → polymorphonuclear leukocyte with first two lobes and then three lobes. The metamyelocytes occur in two forms, one of which is commonly called the juvenile form and the other the stab or staff or band form.

All of these cells are recognized by their morphologic and staining characteristics. It is not the duty of a technician to evaluate or even to recognize some of the more immature cells. Often this may be confusing even to an experienced hematologist.

When infection is present we see a change in the normal blood picture. Just how far this change will take place depends upon the two factors already mentioned, viz., severity of infection and resistance of the patient manifested in the reserve power of the bone marrow to produce mature polymorphonuclear leukocytes.

Most commonly when the infection is mild we see only a slight shift to the left. The polymorphonuclears being affected first they now begin to appear in the circulation in an immature form. At first they may appear with two lobes or with a single nucleus in the form of a band. A gradual increase in the number of bands to 20, 25, or even 30 per cent with no further shift to the left is an indication of good reaction on the part of the bone marrow, provided the total count is in proportion to the severity of the symptoms. If the total count continues to rise without any further shift to the left it is a good sign because it indicates a regenerative shift. On the other hand, with a very sick patient a drop in the total count without any appreciable further shift to the left is a bad sign and indicates an overwhelming infection or low resistance.

When the infection is of any duration it is not uncommon to see a further shift to the left reaching to the myelocyte. Any great increase in the number of myelocytes usually indicates a severe infection. As to how far the shift will occur toward immaturity will depend entirely on how long the infection lasts and how much depression there is to the bone marrow activity. It may reach back to the myeloblastic level, in which case the ultimate outcome will be inevitable.

I have encountered many cases with total counts ranging between 15,000 and 20,000 and a total band count between 40 and 50 per cent. All of these except 1 died. All had very stormy clinical courses from the onset. Throughout their illness they showed practically no change in the blood picture until terminally when the picture shifted further to the left with a blastic count up to 10 per cent in 2 cases.

Although Schilling in his work points out the irritating effects of infection on the monocytes and lymphocytes it would seem that much valuable information can be gained by paying

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THE PRESIDENT'S MESSAGE

EVOLUTION

The "survival of the fittest" does not imply the continued existence of the individual or species best adapted to the accomplishment of some remote pragmatic purpose or noble destiny; it merely means that the organism having characteristics best fitting it for continued existence under given or changing conditions will survive when less adaptable organisms perish and disappear.

The bird that sings the sweetest song and displays the most pleasing plumage will not survive as a result of these qualities alone, desirable though they may be. It must primarily be able to get food, defend itself or avoid enemies and reproduce its kind under adverse circumstances.

Synchronously, or later, a surviving organism may, and often does, develop esthetic or ethical characteristics, but in order to do so it must first survive. Esthetic, or certain "noble" traits, desirable and pleasing in one environment, may become under changing conditions a destroying handicap.

A healthy living organism takes in energizing and building materials, assimilates them, extrudes noxious agents, maintains a constantly readjusting equilibrium between its various internal parts and organs while growing, and at the same time so integrates its total function that it can react adequately and effectively to unfavorable external change.

A social group or institution exists, succeeds or fails under a similar necessity. It must maintain such internal equilibrium and harmonious function between its parts and organs as will permit the maximal integration of its total personality for adequate response to menacing environment and circumstances.

The external environment of the institution of medicine has been changing with accelerating rate since the time of Hippocrates, and especially since Osler. If it is to maintain its useful and desirable characteristics it must preserve above all things its resilient internal coördination and develop organs of prompt integration for effective response to a menacing external situation. Let us adopt the Constitution and By-laws that will provide for such integration and response.

> "It was not made with the mountain,
>   It is not one with the deep.
> Men, not gods, devised it.
>   Men not gods, must keep."

WILLIAM J. MALLORY, M.D.

ON GOING TO MEETINGS

Just as many of us find the ways of our parents in the Gay Nineties something to smile about, so undoubtedly will our sons and daughters be amused over the things we did in the 1930's. For example, the lengths to which we have gone in organization will undoubtedly provoke many a laugh at our expense. The medical profession no doubt will come in for its share of mirth.

Admitting the need for many of the groups now in existence, the thing has really gone too far. It seems that on the slightest provocation, someone organizes a scientific body for Lord knows what except to keep doctors away from home. Such a waste of effort in these times seems to us unjustified and unwise.

Small wonder that physicians groan when meetings are mentioned. We know one physician, quite representative of his colleagues, who is so seldom seen by his family that his own children scarcely recognize him. From county medical society meetings he goes to alumni meetings, from alumni meetings to special society meetings, from special society meetings to committee meetings, and so on ad infinitum. Meetings! Meetings! Meetings! It is a wonder that the physician keeps his equilibrium, to say nothing of his sense of proportion. How he can think in the hurly-burly of such an existence is difficult to understand. Exercising the functions of thought requires at least a modicum of quiet and relaxation, which he is not getting now.

Of course, all this must come to an end sometime, and it will when organizations become so numerous and so many demands are made on a physician's time that there is none of it left for his work. When that time comes we shall see the amalgamation of many organizations and the elimination of others. Speed the day for many of us who have become weary with the demands made upon our time.

What we have said must not be construed to mean that we do not believe in organization, because we do. Modern problems, scientific and otherwise, can be met only by organization. Admitting this fact, it is essential that we belong to and actively support organizations whose efforts promise to be most effective. To us there can be but one choice—the American Medical Association and its constituent state and county medical societies. Many physicians apparently still do not realize what these organizations have accomplished for the public and the profession. Mention need only be made of their successful efforts to maintain high standards of medical education. This alone has had its beneficial effects on every patient and physician in our country.

Yes, we need organization, but not to the extent that we know it today. A merry-go-round of meetings is bound to result in stagnation. Interest cannot help but wane, and fault-finding is to be expected. We are all human and when we are weary we are not ourselves.

If we contemplate remedying this situation we must go about it in a manner which will benefit the profession most. A careful analysis should be made of the benefits which accrue from each one of the medical organizations which we support and whose meetings we attend. We must then determine those which are necessary to our professional well-being. The most difficult step is to act upon our conclusions.

WHAT CAN YOU BELIEVE?

Since medicine has become front-page news we have had ample opportunity to observe the accuracy with which medical matters are reported. It has been an enlightening experience to many of us because we have never realized how many misstatements of fact appear in the press. We say this without any bitterness, because we appreciate the good intentions and the general efficiency of the majority of our newspapers. At the same time, medical organizations have had cause for complaint, especially as to the manner in which controversial issues of the past year or two have been presented to the public. The fault may not lie entirely with the newspapers, although editorializing in news columns, a practice upon which most editors supposedly look with disfavor, has been entirely too common.

Reporters with whom we are acquainted are, for the most part, a conscientious and capable lot. It is their business to obtain news. They are not concerned nor should they be with the right or wrong of an issue about which they are reporting. It is their duty to present the news as they see it based on facts which they are able to obtain. Unfortunately, the reporter is usually in haste because newspapers appear with frequent regularity and he must always meet the "deadline" if he is to remain in the good graces of those who employ him. Undoubtedly, this is responsible for errors and the failure to verify the accuracy of the facts presented. Ordinarily this is not so serious, but when a controversy extends over a long period and it relates to the health of the people, it is a different matter. Frequent errors and distortion in news reports under these circumstances might well prove a menace to public welfare.

We have seen some pretty bad news reports in recent months. They have been misleading and obviously colored by prejudice. Statements have been made which cannot possibly be substantiated by facts, and there seems to have been little effort to correct them. In addition to the dangers to public health, we believe such reporting does an injustice to the profession.

Again we wish to say that we do not question the honesty and integrity of most reporters and newspapers who employ them. We recognize that the medical profession has no right to expect press stories biased in its favor. However, it is entitled to fair play. This it seeks and nothing more.

H. P. R.

THE RICHMOND MEETING

American Association for the Advancement of Science

Mental disease is rather rapidly coming into general recognition as the largest and most pressing single problem in the field of public health. This recognition is due in part to the widespread interest in psychiatry, with its implications for the other fields of medicine, and in part to the growing proportion of hospital beds devoted to mental patients (now over 50 per cent of all the hospital beds of the country), with all that that signifies economically and socially, to mention only two reasons.

The Annals therefore considers it timely to report that the Section on Medical Sciences (Section N) of the American Association for the Advancement of Science will devote all of its next meeting (December 28, 29, 30) to a Symposium on Mental Hygiene. The meeting is to be held in our neighboring city of Richmond, and will consider the many varied phases of the problem. The seventy odd papers to be presented will be printed in advance; in this way the entire period may be devoted to discussion and amplification of the points developed by the formal contributors. The meeting will be a significant one, and will be of interest not only to medical men, whatever their specialty, but to all interested in social welfare. Of especial interest to readers of the Annals is the fact that the symposium was conceived and organized by the late Dr. Earl B. McKinley and Dr. Walter L. Treadway, until recently Assistant Surgeon General of the U. S. Public Health Service in charge of the Division of Mental Hygiene. The latter is chairman of the Program Committee, and Dr. Roscoe W. Hall, Clinical Director of Saint Elizabeths Hospital, is a member of the Committee. Among local contributors to the symposium are Dr. Lawrence Kolb, Assistant Surgeon General of the Public Health Service, Dr. Winfred Overholser, Superintendent of Saint Elizabeths Hospital, and Dr. William Charles White of the National Institute of Health.

On account of the large attendance always found at meetings of the American Association for the Advancement of Science, those who plan to go to Richmond for the meeting are advised to make hotel reservations well in advance.

REPORT OF DELEGATE ON SPECIAL SESSION OF HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION

A special meeting of the House of Delegates of the American Medical Association was called at the request of the Board of Trustees to meet in Chicago on September 16, 1938, for the purpose of defining the attitude of the organized medical profession toward the proposals of the Technical Committee on Medical Care made in its report to the National Health Conference held in Washington last July.

As responsible Government officials have intimated that the recommendations in the report (see Journal of the American Medical Association, July 30, 1938) will be embodied in bills to be introduced at the approaching session of Congress, and as the proposed legislation, if enacted, will profoundly affect the lives and activities of all members of the medical profession, prompt action by the House of Delegates was necessary not only to define the policies to be followed by the Trustees and the Executive Officers of the American Medical Association in defending the interest of the public as well as the physician from the professional point of view, but also to develop the national consensus for the guidance of constituent medical societies.

State secretaries and editors were invited to attend the meeting as well as the elected delegates, and your Executive Committee, in preparation for the Special Session, wisely decided to send its Chairman, Dr. F. X. McGovern, as an additional observer. You were, therefore, for the first time represented by a multiple delegation composed of Dr. McGovern, Chairman of the Executive Committee, Dr. Wallace M. Yater, Editor of the Medical Annals, Mr. Theodore Wiprud, Secretary, and your Delegate. This arrangement proved of great value for two reasons: (1) frequent consultations could be had regarding the proper attitude to take toward proposals as they arose; and (2) information could be gained and representations made by different members of the delegation attending Reference Committees meeting in different places at the same time.

After the purposes of the meeting had been stated in addresses by the Speaker, the President, the President-elect, and the Chairman of the Board of Trustees, the recommendations of the National Health Conference were referred to a Reference Committee of twenty-five members, which was divided into five subcommittees to each of which was referred one of the five major recommendations of the Technical Committee on Medical Care. The Chairmen of the subcommittees and the subjects assigned to each were as follows:

I. Walter E. Vest of West Virginia, Chairman on Recommendation I on Expansion of Public Health Services.

II. H. A. Luce of Michigan, Chairman on Recommendation II on Expansion of Hospital Facilities.

III. Walter F. Donaldson of Pennsylvania, Chairman on Recommendation III on Medical Care for the Medically Needy.

IV. Fred W. Rankin of Kentucky, Chairman on Recommendation IV on a General Program of Medical Care.

V. Frederic E. Sondern of New York, Chairman on Recommendation V on Insurance Against Loss of Wages During Sickness.

Your Delegate was appointed a member of subcommittee V and prepared and presented to the House the report for that Committee.

In addition to the recommendations of the National Health Conference report, numerous plans and proposals for distribution of medical care, offered by state delegations and by individual delegates, were referred to the subcommittee dealing with subjects germane to the contents of the various proposals.

The subcommittees met promptly, each in a designated room, and proceeded to the consideration of their respective problems. All delegates interested in particular phases of the general problem were invited to express their views before the subcommittees. No delegate, or other representative of state societies, could complain that his views were not patiently heard, as the committees sat for hours to afford ample opportunity for full discussion.

Subcommittee IV on a General Program for Medical Care was the center of the greatest activity as it dealt with the subject of health insurance.

Your delegation felt that the future of our own program lay in the hands of this committee. The very strong and able representation by Dr. McGovern of our local problems and of our fixed purpose to develop some type of medical service plan to offer to the people of the low-income group was one of the determining factors which caused the specific recommendation that encourages "county or district medical societies . . . to develop appropriate means to meet their local requirements," believing that "in addition to insurance for hospitalization . . . it is practicable to develop cash indemnity insurance plans to cover, in whole or in part, the costs of emergency or prolonged illness."

Every member of the Society should read in its entirety the report containing the recommendations for a National Health Program. As stated, it may be found in the Journal of the American Medical Association for July 30, 1938. They envisage health needs and lack of health conserving facilities which from the professional point of view are exaggerated, but they set up ideals which must appeal to every thoughtful physician, and seek to provide the money without which our own ideals have seemed impractical.

The reports of the five subcommittees recognized the soundness of the basic thesis set up by the Technical Committee on Medical Care, and endorsed in principle the five general recommendations, with qualifying reservations as to scope and methods where such reservations seemed necessary.

The subcommittee reports then passed into the hands of the Chairmen, sitting as a Reference Committee on the National Health Program as a whole, Dr. Walter F. Donaldson, Chairman. A composite report, epitomizing the subcommittees' reports, was drafted and submitted to the House of Delegates. After discussion and minor amendments, the report was unanimously adopted by the House. The final report was implemented by the following section:

> "To facilitate the accomplishment of these objectives, your committee recommends that a committee of not more than seven physicians representative of the practicing profession, under the chairmanship of Dr. Irvin Abell, President of the American Medical Association, be appointed by the Speaker to confer and consult with the proper federal representatives relative to the proposed National Health Program." (See Journal American Medical Association, September 24, 1938, pp. 1191–1217.)

This report would not be complete without reference to another significant occurrence having to do with the Board of Trustees. In a statement to the House of Delegates, the Chairman of the Board reported that the Trustees were aware of the proposed action by the Department of Justice in an endeavor to secure an indictment of the American Medical Association for alleged violation of the Antitrust Law, only through the published announcements in the press. The report of the Reference Committee on reports of officers and Board of Trustees, which was unanimously adopted by the House of Delegates, contains the following:

> "Firm in a belief in the probity of our officers, and confident of their adherence to established federal law, your reference committee recommends that, in the event of an indictment, this House of Delegates give full support to the Board of Trustees in defending such litigation to the utmost, with every means in its power, exhausting, if necessary, the last recourse of distinguished legal talent, to establish the ultimate right of organized medicine to use its disciplines to oppose types of contract practice damaging to the health of the public."

Respectfully submitted,

Henry C. Macatee, M.D.,
Delegate.

ANNUAL ADDRESS OF PRESIDENT C. WILLARD CAMALIER, D.D.S., F.A.C.D., AMERICAN DENTAL ASSOCIATION, ST. LOUIS, MISSOURI, OCTOBER 25, 1938

The address of Dr. C. Willard Camalier, retiring President of the American Dental Association, and Associate Member of The Medical Society of the District of Columbia, was replete with interesting information and wise counsel. The introductory portion of the address should be of considerable interest to the members of this Society since it indicates the solidarity of thought of the organized dental profession and the organized medical profession. We quote as follows:

"Dentistry in the United States is both progressive in thought and in action. Its conservatism, if it may be so called, is only in direct relation to its desire to protect the quality of service and consequently the health of the people of the United States. Therefore, in my discussion this morning, I desire to lay emphasis on the word 'progressive' in order that all may understand that the dental profession is aware of its responsibilities to society and desires to move forward safely and sanely in its increased ministrations to the well-being of the people. However, it should be recalled that professional education now requires two years of predental and four years of dental training, plus postgraduate work, and the licentiates are accustomed to dealing deliberately with research problems and experiments. If they have learned any lesson well, it is that successful experiments are the result of clear thinking and careful planning. Naturally, therefore, they view hasty action in matters relating to the delivery of dental care as unwise if not a dangerous procedure. This attitude is even more applicable to the physician who today undergoes a most arduous course of study and training more intensive and hazardous, in my opinion, than is the case with any other professional or technical worker. I become somewhat impatient with the criticism of the medical profession for its seeming conservatism, for it is a group of persons primarily interested in the desire to do good, who are humane and philanthropic beyond comparison, and who conduct their practices under a code of ethics unsurpassed by any other class. The objections to certain methods of practice are not based on selfishness but due to the belief that the quality of service, by and large, to the individual may be adversely affected. I plead for patience and a most careful consideration of the viewpoint of the dental and medical professions before changes are instituted in the finest dental and medical systems in the world. As a matter of fact, they are today the pride of every American.

"The American Dental Association is not against progressive change; as a matter of fact, the opposite is true. The Association was glad to cooperate in the deliberations of the recent National Health Conference and will render all aid and assistance possible to officials of the government in efforts to improve the health of the people. The United States Public Health Service under its able leader, Dr. Thomas Parran, and the Children's Bureau of the Department of Labor, Miss Katherine Lenroot, Director, are doing splendid work in their respective fields and our association now has advisory committees working with them. The dental corps of the Army and Navy and of the Veterans' Administration have the support of the Association and its is largely through the efforts of the American Dental Association that these services have been established and brought to their present high grade of efficiency. The component societies in the various states, counties, and cities work quite harmoniously with the departments of health and school officials in an intense effort to improve the health of the communities, with special reference to the children of the nation. Improved programs undoubtedly will eventually be worked out but they should be safe, sane and accomplish what they are supposed to do, namely, to save life and minimize human suffering. The opposite condition could easily result if plans not approved by the organized professions are adopted, destroying not only the faith of the people in the health service practitioners but removing from the heart of the individual practitioner the primary impulse that stimulated him to enter his profession, namely, the desire to heal the sick. Unbiased consideration by all interested groups is the proper method of procedure, and the American Dental Association stands ready to assist. . . ."

THE AMERICAN DENTAL ASSOCIATION'S PRONOUNCEMENT CONCERNING A NATIONAL HEALTH PROGRAM

One of the most important items to come before the House of Delegates of the American Dental Association at St. Louis, October 23, 24, 25, 1938, was the report of the Special Committee of the House of Delegates to consider the recommendations of the Technical Committee on Medical Care to President Roosevelt's Interdepartmental Committee to Coördinate Health and Welfare Activities as presented to the National Health Conference in Washington, D. C., July 18, 19, 20, 1938.

This special committee held hearings long into the night during the recent convention and finally presented a report to the House of Delegates of the American Dental Association which with a few minor amendments was finally adopted in the form given below. The pronouncement was as follows:

Inasmuch as the dental profession has long been aware that the control of dental disease is necessary to the maintenance of health, and inasmuch as the Report of the Technical Committee to the President's Interdepartmental Committee has recognized the fact that dental care constitutes an integral part of a national health program, and inasmuch as the dental profession is the only group having the training and the legal authority to treat dental disease, your Committee has drawn up the following declaration of principles and recommendations which it believes should be presented by the American Dental Association to the Federal Government for its assistance in planning the dental phase of a general health program.

Principles

Your Committee recommends that in the formulation of any national health program, the American Dental Association should insist on inclusion of the following principles:

I. In all conferences that may lead to the formation of a plan relative to a national health program, there must be participation by authorized representatives of the Amercan Dental Association.

II. The plan should give careful consideration to: first, the needs of the people; second, the obligation to the taxpayers; third, the service to be rendered; and fourth, the interests of the profession.

III. The plan should be flexible so as to be adaptable to local conditions.

IV. There must be complete exclusion of non-professional, profit-seeking agencies.

V. The dental phase of a national health program should be approached on a basis of prevention of dental diseases.

VI. The plan should provide for an extensive program of dental health education for the control of dental diseases.

VII. The plan should include provision for rendering the highest quality of dental service to those of the population whose economic status, in the opinion of their local authorities, will not permit them to provide such service for themselves, to the extent of prenatal care, the detection and correction of dental defects in children, and such other service as is necessary to health and the rehabilitation of both children and adults.

VIII. For the protection of the public, the plan shall provide that the dental profession shall assume responsibility for determining the quality and method of any service to be rendered.

RECOMMENDATIONS

Your Committee has considered the five recommendations of the Technical Committee, and, in so far as they apply to dental service, makes recommendation as follows:

I. Expansion of Public Health and Maternal and Child Health Services

(*A*) *Expansion of General Public Health Services*

(1) We approve of the general expansion of public health services and in addition, recommend the establishment of a Federal Department of Health with a secretary who shall be a graduate in medicine, and a member of the President's Cabinet; and a first assistant secretary who shall be a graduate in dentistry.

(2) In an expanded public health program which involves a consideration of the expenditure of millions of dollars for public health purposes, your Committee recommends that the problem of dental caries and other dental diseases be included.

(*B*) *Maternal and Child Health Services*

Your Committee approves, providing that dental care of mothers and children be included. It is, of course, understood that the necessary funds will be allocated for these services.

II. Expansion of Hospital Facilities

Your Committee recommends that due consideration be given to the inclusion of adequate facilities for dental services.

III. Medical Care for the Medically Needy and

IV. A General Program of Medical Care

(1) Your Committee is convinced that satisfactory dental service cannot be rendered under a compulsory health insurance system. We, therefore, do not favor such a plan but do approve voluntary budget plans under professional control which will enable patients to "apportion costs and timing of payments so as to reduce the burdens of '*dental*' costs and remove the economic barriers which now militate against the receipt of adequate '*dental*' care."

(2) The Committee approves the recommendation that such a program should provide for "continuing and increased incentives to the development and maintenance of high standards of professional preparation and professional service."

V. Insurance Against the Loss of Wages During Sickness

Considered without recommendation.

VI. In view of the fact that dental caries is the most prevalent disease of mankind, the American Dental Association strongly recommends that the Federal Government augment, with a comprehensive research program, the efforts of the organized dental profession to determine the cause of this disease.

CONCLUSION

Your Committee agrees with the Technical Committee's belief, "that, as progress is made toward the control of various diseases and conditions, as facilities and services commensurate with the high standards of American medical practice are made more generally available, the coming decade, under a national health program, will see a major reduction in needless loss of life and suffering—an increasing prospect of longer years of productive, self-supporting life in our population." We also believe that the above statements apply equally to dental practice and that the enumerated benefits would be enhanced by early and regular dental care in childhood.

Your Committee offers a final recommendation that in keeping with the first main principle of this report, a committee of five practicing dentists be appointed by the Board of Trustees to fulfill the provisions of Principle Number I, together with such other technical advisers as the Committee may see fit.

TRANSACTIONS OF THE WASHINGTON SOCIETY OF PATHOLOGISTS

The meeting of the Washington Society of Pathologists was called to order by the President, Dr. Janvier W. Lindsay, at 1:30 P.M., Saturday, October 1, 1938, in the Army Medical Museum. There were 26 members and 8 guests present.

Presentation of Cases

Dr. L. L. Ashburn presented 25 microscopic slides (S-9336) from the case of a colored man, 18 years of age, who complained of pain when pressure was applied to the lower right second molar tooth. Symptoms were present for 4 months prior to extraction, which was done following a clinical and X-ray diagnosis of an encapsulated apical abscess resulting in fibrous odontoma. The gross specimen showed a bony, oval mass approximately 20mm. in diameter attached to and apparently continuous with the apices of both roots. The microscopic section passes through the tooth, includes one root and the tumor, and shows the presence of a cementoma.

In the discussion it was said that odontomas might be classified into four main groups, namely, calcified epithelial odontoma, radicular odontoma, dentine odontoma and composite odontoma. This case is apparently of radicular origin or an aberration of the dental follicle or capsule rather than of epithelium.

Dr. E. Clarence Rice presented the case of an 11-months-old white child who had intermittent fever, intermittent vomiting and anorexia, all for 5 months, and intermittent diarrhea and drowsiness for 1 month. Her parents and immediate associates had never been out of Virginia. From the sixth month, when the patient was weaned and placed on a formula of raw cow's milk and Dextri-maltose she had failed to do well. The milk was obtained from a cow owned by the family and was not known to be tuberculin-tested. Three weeks after being placed on the formula it was noted that an intermittent fever would come and go. Projectile vomiting occurred 2 to 3 times daily. She began to lose weight. At the tenth month she slept a great deal of the time during which there would be periods of diarrhea followed by constipation. During the fifth month of her illness the essential positive findings were as follows: malnutrition, dehydration, slight ptosis of the left eyelid, small palpable cervical lymph nodes, slight scaling of the skin of the hands and feet, and a slightly elevated oval white soft lesion over the left lower costal region. A systolic murmur was heard over the region of the pulmonary valve. The spleen extended to the iliac crest and the liver 6 cm. below the costal margin in the right midclavicular line. Blood examination was as follows: Hemoglobin 5.0 Gm. per 100 c.c., erythrocytes 2,140,000, leukocytes 3,700, neutrophiles 63 per cent (segmented 57 per cent, staff 6 per cent), eosinophiles 2 per cent, lymphocytes 34 per cent, monocytes 1 per cent, and plasmocytes 1 per cent. Wassermann and Kahn tests were negative. The initial diagnosis was (1) possible blood dyscrasia; (2) malnutrition. Ten transfusions and nearly daily clyses were required to maintain the admission weight. Ten days after admission a decubitus ulcer over the spine was noted. Four days later a large purplish area appeared on the left chest, the next day a large blue area on the right chest. One week later purplish areas were observed on the chest and abdomen and small circular discrete gangrenous areas manifested themselves on the face. During the first 7 days in the hospital the temperature ranged between normal and 101° and 102°F. From the tenth day, a fever between 101° and 103°F. was maintained. Exitus occurred on the twenty-second day after admission, 6 months after the onset of the illness.

The necropsy revealed hemorrhagic areas of varying size scattered over the surface of the body, the largest being 2 cm. in diameter. The lungs showed numerous petechial hemorrhages and a number of circumscribed firm red areas. The liver weighed 237 Gm. and was firmer than usual. The spleen weighed 144 Gm. In the intestines there were many small petechiae in the serosa. The mesenteric vessels were intensely injected. Numerous small hemorrhagic areas, some with ulceration, were found in the edematous mucosa. Peyer's patches were prominent and hemorrhagic. The thymus, mediastinal and bronchial lymph nodes were not enlarged. The retroperitoneal nodes were considerably enlarged. A number of hemorrhagic areas were found in the adrenals along with firm white areas, the largest being 2 by 6 mm. The kidneys were enlarged, being 70 per cent oversize. They were congested and showed petechial hemorrhages. Several small gray areas and a few white ones were scattered through the cortex and medulla. Microscopic examination reveals Leishmani-form parasites in the reticuloendothelial cells of the liver and spleen.

This is the only case of this sort that has been seen at Children's Hospital. The reaction, from the clinical side, was that it should be called infantile kala-azar; and it has also been suggested that it might be Chagas' disease. They are very much alike, and the organisms are very similar. How this child picked it up we do not know. The doctor made a trip to visit the child who lived in a small town, and the child had never been out of the town except to come to Washington. However, it was learned that some shipment may have been received from a foreign country.

Dr. Roger M. Choisser presented 25 slides from the case of a primiparous white woman, aged 21, in the eighth month of gestation, who complained of backache and non-productive cough. Her periods have always been regular up to this pregnancy and her past history was essentially negative. Physical examination revealed a 21-year-old white woman 5 feet in height, weighing 112 pounds, thin, pale and asthenic. The blood pressure was 120/80; the pulse rate was 90; and the temperature was normal. The abdomen was swollen to the size of a full-term pregnancy, and on palpation 2 separate masses were found. One large mass in the midline extended up to the umbilicus through which fetal movements were discernible. The other mass occupied almost the entire left abdomen. Further examinations were negative. The patient stated that she had lost 15 lbs. during the preceding 8 months in spite of the pregnancy. Two days later the patient delivered a 7½ pound stillborn fetus. The mass in the left side remained and resembled the back of another fetus. X-ray films revealed no fetal skeleton. It was believed to be a tumor of the left ovary or a pedunculated uterine myoma. Two days later the patient developed pain in the lower right chest and persistent cough. X-ray showed right hydrothorax, and 500 c.c. of blood-tinged fluid were aspirated. Laparotomy 4 days later revealed a large, oval, soft hemorrhagic mass in the region of the left ovary which extended up to the lower pole of the left kidney. There was also about 2,000 c.c. of bloody fluid in the peritoneal cavity. Hemorrhage from the tumor was profuse and difficult to control. The patient died 4 days later. Grossly, this rapidly growing tumor resembled placental tissue. Epithelium was not found. Microscopic section of the biopsy specimen was of entirely necrotic material. This is a round-cell sarcoma on the basis of the morphology of the cells.

Dr. T. L. Perrin presented the case of a white man, aged 44, a floor scraper, who was admitted to the hospital, July 7, 1938, and died July 18, 1938. The complaints were weakness and cramps in the stomach. Three weeks before the patient had begun to get weak and noticed that his sclerae were yellow and his urine brown. Five days before he had developed cramps in the upper abdomen. The jaundice gradually increased, and there was a loss of 10 or 12 lbs. He consumed about ½ pint of whiskey each week, and about 10 to 12 bottles of beer daily. He smoked 8 or 9 cigars daily and an occasional cigarette. He took an occasional bromo seltzer. Physical examination revealed a jaundiced, short, well developed man. The pulse rate was 60, the respirations were 15, and the blood pressure was 105/70. The liver was palpable two finger breadths below the costal margin, smooth and not tender. Laboratory examination: Urine amber; sp. gr. 1.020; albumin, 2 plus; Kline exclusion, 2 plus; Kahn, 2 plus; Kline diagnostic, negative; red blood cell count 3,950,000; Hg. 13.4 Gm.; white blood count 5,950. X-ray study of the gastro-intestinal tract indicated pathology about the pylorus, probably an ulcer. No dye appeared in the gall bladder. On the ninth day at 1 P.M. he became delirious, had to be restrained, and morphine failed to quiet him. The next day he began to vomit and Wangensteen drainage was started, 4,000 c.c. of glucose being given that day. He continued to vomit brownish material and became weaker and comatose. In this case there was no history of arsphenamine therapy. The material used in his occupation as floor scraper was a mixture of wood alcohol and gasoline.

Postmortem findings: Aside from a bilateral bronchopneumonia, pertinent pathologic findings were confined to the liver, which was smaller than normal and weighed 1,030 grams; the edges were smooth and rounded, and the parenchyma flabby in consistency. The sectioned surfaces were mottled with minute yellowish-green and intense red areas. On fixation the tissue was of intense green color. The gall bladder was small and atrophic. Microscopic examination of three sections show a diffuse process of necrosis, variable in degree, but involving the entire liver; no normal liver lobules are seen. The remains of the lobules consist of a loose reticulum in some areas, in which are seen scattered liver cells in all stages of necrosis as well as clear spaces where necrotic liver cells have dropped out; many of the liver cells contain a moderate amount of a greenish black pigment. In addition to the liver cells there are lymphocytes, plasma cells and lesser numbers of polymorphonuclears; these cells are seen scattered about and in focal accumulations. Kupffer's cells are increased in number, and many contain small amounts of golden brown pigment which stains with Perls' stain. There are also a moderate number of single and conglomerate lobules which are completely necrotic, represented by a granular amorphous oxyphilic material in which are seen scattered nuclei in various phases of degeneration. There are scattered small foci of hemorrhage in the necrotic areas. There is a marked proliferation of small bile ducts, the cells of which show very little involvement by necrosis. Diagnosis: Acute yellow atrophy of the liver; bronchopneumonia, bilateral.

Dr. Walter Freeman presented a case of a physician aged 50. He was from a hypertensive family and discovered his diastolic pressure to be 140 in 1933. In 1935 he had had a mild attack of cerebral thrombosis and was disabled for 2 months. He continued to suffer from mild dizziness, but continued to work, eat and smoke to excess as before, and on December 22, 1937, he had a stroke with profound coma, paralysis of the left side and normal cerebrospinal fluid. Ten days later the patient was bordering on uremic coma but survived this, had some fluctuation but went in a generally downward course and died on March 28, 1938.

Autopsy revealed a hemiplegic deformity, enlargement of the heart, generalized arteriosclerosis, nephrosclerosis, and small suprarenals with liquefaction of the inner layer.

Examination of the brain revealed an elongated cyst in the external capsule with a delicate core of fibrous tissue and considerable reddish brown pigmentation. It extended in the direction of both the anterior and posterior horns of the ventricles, but rupture had not taken place. There were several other smaller infarcts scattered throughout the brain. Sections are presented from the precentral cortex of right and left hemispheres, showing axonal chromatolysis of some of the giant pyramidal cells on the right side. Sections of the cord, stained by Marchi's method, are presented to show the distribution of the degeneration of the spinal cord.

The specimens are illustrative of the fact that degeneration can be traced both proximally and distally in the central nervous system by using different methods of examination.

Drs. Hunter, Tolstoi and **Golden** presented the following three cases: **Case 1.** The patient entered the hospital with a gynecologic complaint. Physical examination revealed enlargement of the thyroid gland, the history concerning which indicated that some enlargement had been present for the last 10 years. There had been quite a noticeable increase in size of the thyroid gland and nervousness in the past year. Subtotal thyroidectomy was done and the patient made an uneventful recovery. The patient's general condition at present is satisfactory and no recurrences have been observed. Low grade malignancy was diagnosed in the course of routine examination of tissue removed at examination.

Case 2. A white woman, aged 21, entered the hospital with symptoms similar to subacute appendicitis and longstanding anal fissure. The latter was repaired and at operation a mass was felt in the right lower quadrant. Subsequently laparotomy revealed dermoid cyst of the ovary. The unusual features were demonstrated in the course of routine examination of tissue removed at examination. Thyroid lobules and ganglion cells were demonstrated in the dermoid cyst.

Case 3. A markedly enlarged bladder with double ureters on the right side and a lump or horseshoe kidney was removed from an 8-month stillbirth. The mother's past history revealed 1 previous pregnancy with abortion at 3 months. The mother, a white woman, aged 31, had been treated for 1 year for pernicious anemia. The fetal heart was not heard at any time after the onset of labor. The delivery, a double footling, occurred with ease in 17½ hours. At autopsy no gross abnormalities were noted except a distended abdomen. On section the bladder was found to fill almost completely the abdominal cavity and was distended with a quart of urine. There was urethral obstruction, 3 patent ureteral openings, and a thin trigone with thickening of the rest of the bladder. Kidney tissue in the midline and an abnormality of pelvis formation were among the interesting features noted in the urinary system.

The meeting adjourned at 3:45 P.M.

LETTER TO THE EDITOR

The Treatment of Colds

I am subject to rather frequent colds which in the past have followed a remarkably uniform course. They always begin with a "pharyngitis" complex; two days later a coryza with profuse nasal secretions follows, terminating on the fifth or sixth day of the cold with thickening of the secretions and general improvement. I have always used the generally advised treatment: forcing fluids, bicarbonate of soda and juices of citrus fruits, and analgesic-antipyretics; usually a few tablets of acetyl salicylic acid. Although I often began the treatment on the first day, I was never able to "break up" the cold.

During the past two years I decided to test the efficacy of salicylates in the treatment of colds upon myself. Neglecting all other remedial measures I commenced acetyl salicylic acid medication upon the first appearance of the symptoms of pharyngitis. Three five-grain tablets served as a single dose. These were taken in the morning, at noon, at mid-afternoon, before supper and at bedtime (gr. XV, five times; gr. LXXV, total daily dose). This was repeated on the following day. I went to my laboratory as usual during this treatment. The only untoward symptom I experienced was a mild buzzing in the ears in the evening, which did not prevent sleep and disappeared in the morning.

Out of eight colds six never reached the stage of profuse nasal secretions under this treatment and were effectively "broken up." In the two other instances I had the impression that the symptoms were less severe, nevertheless the cold ran its usual course.

I concluded therefore that salicyl compounds have an action in colds beyond their analgesic or antipyretic effects, but that this action becomes obvious only if they are administered in doses somewhat comparable to those given in the treatment of acute rheumatic fever. It might be interesting to try this vigorous salicylate treatment on a large number of cases and compare the results with other conservative treatments of colds.

Theodore Koppanyi, Ph.D.
The Department of Pharmacology and Materia Medica,
Georgetown University, School of Medicine

CALENDAR FOR COMING MEETINGS

Friday, December 16: *Section on Ophthalmology and Otolaryngology.*
- "The Role of the Pharynx in Focal Infections." Victor Alfaro, M.D.
- "Acute Fulminating Per-Tracheobronchial Lymphadenitis." W. O. Bailey, M.D.

Wednesday, January 4: Stated meeting.

Wednesday, January 11: Symposium on Narcotic Addiction:
- "Some Thoughts on the Theories and Treatment of Drug Addiction." Lawrence Kolb, M.D., Assistant Surgeon General, U. S. Public Health Service.
- "Psychiatric Aspects of Drug Addiction." Dexter M. Bullard, M.D., Chestnut Lodge Sanitarium.

Wednesday, January 18: Symposium on Affections of the Kidney in Infancy and Childhood by the *Section on Pediatrics:*
- "Acute Post-Infectious Hemorrhagic Nephritis, Chronic Nephritis with Hypertension." Edgar Copeland, M.D.
- "Nephrosis." John McLeod, M.D.
- "Pathology." E. Clarence Rice, Jr., M.D.
- "Acute Pyuria." Hugh Davis, M.D.
- "Chronic Pyuria and Malformation." Charles Howze, M.D.

NEWS AND PERSONALS

The Annual Midwinter Conference of Eastern Radiologists will be held in Washington on Friday and Saturday, February 10 and 11, 1939, at the Hotel Mayflower. Information desired may be secured from the secretary of the local committee, Dr. Joseph F. Elward, 1726 Eye Street, N.W.

The Washington Medical and Surgical Society held its first meeting of the year on October 24. Dr. Joseph Horgan, the retiring president, gave his presidential address on "Some Surgical Considerations of the Redundancies of the Colon." On November 28 Dr. Joseph Elward read a paper on "Hypernephroma." The following officers are serving this year:

> Dr. Robert Oden, President; Dr. Beveridge Miller, Vice President; Dr. H. J. Russell McNitt, Secretary, and Dr. Frank E. Gibson, Permanent Treasurer.

The George M. Kober Medical Society is holding monthly meetings at the Columbia Country Club. On October 17 Dr. Harry Zehner discussed "Coronary Thrombosis." At the meeting, November 21, Dr. Russell Fields talked on "Some Interesting Skin Diseases" which he illustrated with lantern slides. Dr. H. J. Russell McNitt presented a paper on "Acute Appendicitis in Pregnancy." Following are the officers for 1938–39:

> Dr. Don Johnson, President; Dr. William M. Ballinger, Vice President; Dr. H. J. Russell McNitt, Secretary, and Dr. Don S. Knowlton, Treasurer.

The Washington Gynecological Society was addressed by Dr. W. Warren Sager, by invitation, December 3 on the subject "A Case of Carcinoma of the Ovary in a Child." Dr. S. M. Dodek gave a report on "A Case of Dysgerminoma of the Ovary Complicating Pregnancy."

Scientific Exhibit of the American Medical Association. Application blanks are now available for space in the Scientific Exhibit at the St. Louis Session of the American Medical Association, May 15–19, 1939. Attention is called to the fact that the meeting is a month earlier than usual, and applications close January 5, 1939. Blanks will be sent on request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn St., Chicago, Ill.

Dr. Norman P. Scala and **Dr. E. A. Spiegel** (Philadelphia) presented a paper jointly, by invitation, "On the Mechanism of Optokinetic

Nystagmus" on October 14 before the Annual Convention of the American Academy of Ophthalmology and Otolaryngology, which was held in Washington, October 9–14, 1938.

Dr. G. J. P. Barger was elected to the Board of Directors of the Academy of Physical Medicine at its annual meeting which took place October 24, 25, and 26, 1938 at the Willard Hotel. Members of the Society who participated in the program were Drs. Custis Lee Hall, Jay L. Hoffman, Winfred Overholser, R. Rhett Rathbone, and R. L. Sexton.

The Eye Institute of the District of Columbia Society for the Prevention of Blindness was held at the Society's auditorium November 14 to 19. In attendance were public health nurses, general nurses, social workers, school teachers and other interested persons.

The Medical Society gave recognition to the fine work of this organization at its meeting on October 5, 1938, when use of the auditorium for the Institute was granted.

The Southern Medical Association held its Thirty-second Annual Session in Oklahoma City, Oklahoma, November 15–18, 1938. More than two thousand doctors registered for the meetings, among whom were the following members of The Medical Society of the District of Columbia:

Drs. Harry F. Anderson, Joseph B. Bogan, Wm. Thornwall Davis, Oscar B. Hunter, Guy W. Leadbetter, C. William Mitchell, Margaret M. Nicholson, R. Lyman Sexton, and Walter A. Wells.

Dr. William Thornwall Davis, who served as Councilor during the past year, was elected Chairman of the Executive Committee for 1938–39.

The next annual meeting will be held in Memphis, Tennessee, in November, 1939.

BOOK REVIEW

Interns Handbook, by Members of the Faculty of the College of Medicine, Syracuse University. J. B. Lippincott Co., Philadelphia, London, Montreal, 1938. Second Edition, 523 pages. Price: $3.00

This book has been extensively revised. It is a handy little volume and should prove of considerable value to interns particularly and to general practitioners also. A book of this type should be revised annually as needed. It is hoped, therefore, that this will be possible and it is felt that such revision will be relatively inexpensive, since in the majority of instances it will not entail much resetting and little, if any, repagination.

For the purpose for which this book is intended we can recommend it highly.

REPRINTS RECEIVED

The following reprints have recently been received for which due acknowledgment is made:

"Paralysis of the Inferior Oblique Muscle Following the Caldwell-Luc Operation." Joel N. Novick, M.D. Archives of Otolaryngology, September, 1938.

"Hypodermic Use of Adrenalin for Differential Diagnosis between Acute Pylorospasm and Ruptured Peptic Ulcer." James T. Wolfe, M.D. Virginia Medical Monthly, July, 1938.

"Congenital Displacement of the Tricuspid Valve (Ebstein's Disease): Review and Report of a Case with Electrocardiographic Abnormalities and Detailed Histologic Study of the Conduction System." Wallace M. Yater, M.D., F.A.C.P., and Morse J. Shapiro, M.D. Annals of Internal Medicine, December, 1937.

"Demonstration of a Ruptured Popliteal Aneurysm by Thorium Dioxide Arteriography." Wallace M. Yater, M.D. Southern Medical Journal, October, 1936.

"The Diagnosis of Solitary Liver Abscess by Means of Thorotrast Hepatosplenography—Report of a Case." Wallace M. Yater, M.D., F.A.C.P., and John R. Cavanagh, M.D. Annals of Internal Medicine, August, 1937.

"Hepatosplenography with Stabilized Thorium Dioxide Sol." Wallace M. Yater, M.D., Laurence S. Otell, M.D., and Hugh H. Hussey, M.D. Radiology, October, 1936.

"Histopathologic Study of Tissues of 65 Patients Injected with Thorium Dioxide Sol for Hepatosplenography—With a Follow-up Study of 10 Old Cases." Wallace M. Yater, M.D., M.S., and Eugene R. Whitmore, Ph.D., M.D., Dr.P.H. American Journal of the Medical Sciences, February, 1938.

"Maintenance of the Functional Integrity of Occluded Large Arteries as Demonstrated by Thorotrast Arteriography." Wallace M. Yater, M.D., M.S. American Journal of the Medical Sciences, September, 1937.

"The Paradox of Chiari's Network—Review and Report of a Case of Chiari's Network Ensnaring a Large Embolus." Wallace M. Yater, M.D. American Heart Journal, May, 1936.

"Rate of Deposition of Thorotrast in the Human Liver and Spleen." Wallace M. Yater, M.D. American Journal of Roentgenology and Radium Therapy, September, 1937.

"Thorotrast Arteriography of the Extremities with Report of Illustrative and Unusual Cases." Wallace M. Yater, M.D. American Heart Journal, October, 1936.

"Thromboangiitis Obliterans in Negroes." Wallace M. Yater, M.D. American Heart Journal, May, 1937.

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particular attention to the total white cell count and the extent of the shift to the left.

A shift to the right of the polymorphonuclear leukocytes, meaning an increase in the number of lobes of the nucleus, reaching often to 8, occurs in only one condition and that is in pernicious anemia. What prognostic significance this shift may have only further study will tell. At present we cannot evaluate this finding.

In this paper I have not attempted to deal with the various phases of the Schilling hemogram nor to discuss the various unusual blood pictures seen associated with an occasional rare pathologic condition. These are numerous and complicated. It has been my aim to point out briefly how a blood picture should be considered and what firsthand ready information can be gained from the majority of routine hemograms.

William Kennedy Butler, A.M., M.D.

(1857-1938)

Dr. William K. Butler, a Life Member of The Medical Society of the District of Columbia, died at his home in Chevy Chase, Maryland, October 17, 1938. He became a member of the Medical Association of the District of Columbia in 1889 and was elected to membership in the present Medical Society in 1891. He was born in Washington on March 7, 1857, the son of Dr. John G. Butler, founder and first pastor of Luther Place Memorial Church at Thomas Circle. His father served for many years as Chaplain of the House of Representatives and in the same capacity for the Senate, to which post he was appointed by President Lincoln.

Dr. Butler completed both his premedical and medical education at Columbian University, now known as George Washington University, receiving his medical degree in 1882. Soon after graduation he started practicing medicine at 1207 M Street, N. W., where he continued until his death. In 1897 he established the "Lutheran Infirmary," an eye, ear, nose and throat clinic, on the ground floor of his father's church, the Luther Place Memorial. He continued as Chief Surgeon of the clinic until it was disbanded at the beginning of the World War. He taught for many years at the George Washington University School of Medicine and at the time of his death was Professor Emeritus in Ophthalmology.

Dr. Butler served as Vice President of The Medical Society of the District of Columbia in 1907 and was affiliated with the American Medical Association, the Clinico-Pathological Society, the American Ophthalmological Society, and the Washington Ophthalmological Society. He was an officer in his church and a member of the Cosmos Club and the Chevy Chase Club.

Dr. Butler is survived by his widow, Mrs. Eleanor Butler, a daughter, Mrs. Kenneth S. Wales of Washington, and two grandchildren.

John William Chappell, M.D.

(1855-1938)

Dr. John W. Chappell, a Life Member of The Medical Society of the District of Columbia since 1933, died at his home following a brief illness November 2, 1938.

Of the third generation of native Washingtonians, Dr. Chappell was born on the old Chappell farm below Chevy Chase Circle, November 22, 1855. He received his degree in medicine from Columbian University (now George Washington University) in 1881. He was president of the George Washington Medical Society in 1906 and 1907 and was a member of the American Medical Association and the Therapeutic Society. He was elected to membership in the Medical Association of the District of Columbia in 1892 and became a member of the present Society in 1893. He retired from active practice in 1934. He was a charter member and past master of the William R. Singleton Lodge, F.A.A.M.

Dr. Chappell is survived by his widow, Mrs. Ida Chappell; a son, Lieut. Col. Sidney L. Chappell of the Army Medical Corps; a daughter, Mrs. Clara C. Brown, and a granddaughter.

Benjamin Wallace Vitou, B.S., M.D.

(1911-1938)

Lieutenant Benjamin W. Vitou, M.D., of the United States Navy, who became an Associate Member of The Medical Society of the District of Columbia early this year, died at Chefoo, China, September 9, 1938.

Dr. Vitou was born in Portland, Oregon, November 24, 1911. After receiving his medical degree from Creighton University in 1936, he served a year's internship at St. Joseph's Hospital, Tacoma, Washington. He was commissioned an Assistant Surgeon with the rank of Lieutenant (junior grade) in the Medical Corps of the Navy, August 1, 1937, and was assigned to duty in attendance upon a postgraduate course of instruction at the Naval Medical School, Washington, D. C. Upon completion of this course of instruction in April, 1938 he was assigned to the Asiatic Station.

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